Toward Army Maneuver Transformation

A Monograph
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The merging of the Armor and Infantry branches into a single functional branch is occurring due to several factors – business efficiencies, tactical integration of movement, maneuver, and fires on the GWOT battlefields, formalization of the Army warfighting functions into the operations process, and continuing concept development to satisfy the need for Army integration with the Joint Force Application functional concept. The 2005 BRAC legislation mandated the creation of an Army Maneuver Center at Fort Benning, Georgia; two interdependent schools will continue to develop and evolve within this center so that the requirements for Army maneuver capabilities can be satisfied to form the nucleus of joint land domain Force Application formations. This branch will be responsive to the needs of the operating force by adjusting the institutional inputs to force development and continuous improvement of operating designs of Army Maneuver Forces. Centralized control of the DOTMLPF resource processes will allow the Army Maneuver Branch to anticipate and meet these requirements and develop a more agile and tactically dominant force. A greater understanding of the maneuver system and systems of maneuver (forms of maneuver warfare through force tailoring to achieve operational defeat effects) will be achieved within the Army and the joint force.

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Abstract

TOWARD ARMY MANEUVER TRANSFORMATION, by MAJ Charles B. O'Brien, United States Army, 65 pages.

The evolution of the Armor and Infantry branches into a single functional branch is occurring due to several factors – business efficiencies, tactical integration of movement, maneuver, fires and engagement on the GWOT battlefields, formalization of the Army warfighting functions into the operations process, concept development and the need for Army integration with the Joint Force Application function, and the need for adaptive and tailorable formations in the present and future security environment. The 2005 BRAC legislation mandated the creation of an Army Maneuver Center at Fort Benning, Georgia, bringing together the Armor and Infantry into a common institutional center. Two interdependent schools will continue to develop and evolve within this center of excellence, so that the requirements for Army maneuver capabilities, balancing maneuver and engagement, can be satisfied to form the nucleus of land domain Force Application formations. This branch will be responsive to the needs of the joint force in Unified Action by adjusting the institutional inputs to force development of Army Maneuver Forces (within strategic guidance for the right mix of maneuver and direct engagement BCTs dependent upon the needs of the national security environment). Centralized control of the DOTMLPF domains using the ARFORGEN model of unit life cycle management and mission orientation, as well as applying TRADOC Capabilities Managers' Unit of Action Integrated Concept Teams for mission preparation will allow the Army Maneuver Branch to anticipate and meet these requirements and develop a more agile and tactically dominant force. A greater understanding of the maneuver system (task organized for mission orientation), as well as systems of maneuver (forms of maneuver warfare through force tailoring to achieve specific operational defeat effects) will be achieved within the Army and the joint force. Ultimately this will allow for maximum effectiveness within higher degrees of efficiency – a goal for the BRAC legislation as well as a necessity for the mounted and dismounted warriors fighting on the near future battlefields in adaptive systemic warfare. This is the future of a common Army Maneuver Branch fielding adaptive and mission-oriented Maneuver Forces.

TABLE OF CONTENTS

TABLE OF FIGURES

I. INTRODUCTION

> That same year, the revised version of Field Service Regulations, U.S. Army insisted that 'no one arm wins battles. The combined employment of all arms is essential to success.' In the next paragraph, however, it stated that the mission of the entire force 'is that of the infantry'. – "Combined Arms Warfare in the Twentieth Century"[1]

The 2005 Base Realignment and Closure Act (BRAC) legislation mandated the merger of the United States Army's Infantry and Armor centers and schools into a single institution to be located at Fort Benning, Georgia.[2] The Chief of Staff of the Army (CSA) has directed this new entity is to form the heart of the Army's Maneuver Center of Excellence, with the purpose to develop the Army's maneuver force. This force will continue to constitute the United States Army land component's primary operating formations which are tasked to accomplish the joint force commander's purpose and intent in the physical (vice cognitive and informational) and land (vice sea, air, and space) domains, particularly in persistent or continuous operations.[3] No other force has the responsibility to accomplish the overall mission, and thus, achieve effects that lead to our nation's victory in conflict and war (other types of forces or formations can attain supporting effects within the physical domain, or primary effects in the non-physical domain).[4] Development of the maneuver force over the years can and will take on many permutations, but never should the force lose its inherent capability to dominate the contested land domain in which it will operate. The task of force development is slowly shifting from the parochial domains of branches, primarily those of Armor and Infantry, to the functional domain of maneuver.

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[1] Jonathon M. House, *Combined Arms Warfare in the Twentieth Century*. (Kansas: University Press of Kansas, 2001), 96.

[2] Department of Defense. *Base Realignment and Closing Act 2005*, (Office of the Secretary of Defense, May 2005).

[3] U.S. Army. *Army Comprehensive Guide to Modularity (Version 1.0)*, (Headquarters, U.S. Army Training and Doctrine Command, 8 October 2004), 6-1.

[4] U.S. Army, *Field Manual 3-90.6, Heavy Brigade Combat Team*, (Headquarters, Department of the Army, (March 2005), p.2-6.

The Army's Maneuver Center of Excellence, shortened to Maneuver Center (there is no need to continue to state the obvious – that excellence is an attribute and quality of any of our professional centers) [5], will itself evolve from the pairing of the two existing branches as co-equal and separate under one command structure to eventually one of interdependent forces forming the nucleus of the function of maneuver. The amount of parochialism combined with limited vision of the future battlefield will have a negative impact upon this evolution, whereas creativity and sense of greater purpose will allow for unlimited change within the developing maneuver force. Simply stated, we can either modify the current branches under the guise of a new maneuver center name, or we can truly develop maneuver forces that will become the heart of the joint force of the near future.

The proposed Maneuver Center mission includes: providing the nation with the world's best trained Armor, Cavalry, Reconnaissance, and Infantry soldiers and adaptive leaders; acting as a power projection platform capable of deploying and redeploying soldiers, civilians, and units; and defining Armor, Cavalry, Reconnaissance, Surveillance, and Target Acquisition (RSTA), and Infantry requirements for materiel development to meet the needs of the Future Force. It is the first and third components of the stated mission that this paper will focus its efforts. The central research question is – Will the merger of the institutional Armor and Infantry into the proposed Maneuver Center (of Excellence) eliminate these two current branch structures and create a new maneuver force, or branch? The thesis of this paper is that the merger of the current branches into a common institutional center and interdependent schools will facilitate the development of a functional maneuver branch supporting an operating force developed along purpose-driven lines.

This research and paper is formed into three major sections – (1) A survey of the national security environment, defense strategies, and Joint military doctrine to assist in identifying future

[5] Timothy Reese and Aubrey Henley, "A Modest Proposal to Do Away With the Armor Branch," (Fort Knox, Kentucky, *Armor*, September-October, 2005), 5-9.

Army strategic to operational requirements, (2) evolving branch and functional designs, maneuver concepts, and force generation requirements help to identify what we have, and thus what is still needed to satisfy those requirements, and (3) recommendations using an evolved Maneuver Branch and Forces framework that allows for the synchronization of the Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF)[6] domains applied through the Army Force Generation (ARFORGEN) model that can guide the transformation of Armor and Infantry into a more common institutional branch and effective operating force to meet the strategic requirements. This is the future of a common Army Maneuver Branch fielding adaptive and mission-oriented Maneuver Forces.

Prelude – Observations and Assumptions

Observations

Since 1939 the United States Army has reviewed and experimented with the structure of its fielded forces and supporting institutions at least twelve times. These initiatives have been in response to changing environmental requirements, both internal and external, as well as perceived shortcomings in capabilities to meet those requirements.[7] After the terrorist attacks on September 11, 2001 the United States Army has directly supported the nation's Global War on Terror (GWOT) by providing combat brigades and supporting forces from all ten of its active duty divisions as well as a record amount of combat forces from its reserve component. Yet, the Army must also transform into a modular force that is expeditionary in nature with campaign-like endurance; this requires increased agility to deploy around the world while maintaining the strength to conduct operations within many environments. The promises of break-through

[6] U.S. Army. *How the Army Runs, A Senior Leader Reference Handbook*, (U.S. Army War College, 2003-2004),10. DOTMLPF is a DOD force management construct to describe the various elements that go into generating capabilities and their requirements to accomplish Army missions and functions. It is analogous to the use of PMESII to describe a system of systems.

[7] U.S. Army. *CSI Report No.14, Sixty Years of Reorganizing for Combat: A Historical Trend Analysis*, (Fort Leavenworth, Kansas: Combat Studies Institute, December 1999).

technology and new applications of existing capabilities provide hope for the proper balance between 'speed and power' from the strategic to the tactical levels of war.[8] The ability to adapt to the changing environment while providing continuous improvement of concepts, processes, and organizations is a real need – one that must capture innovation and adaptation by design.[9] Appendix 1 provides an historical example of different national armies and their efforts to adapt to the changes in the conduct of warfare following World War I.

Working Assumptions

In order to frame the context of this paper, some assumptions were made as to the near-, mid-, and long-term future; these predictions and assumptions are less accurate as the point of reference moves further ahead into the future.

(1) Nature of war will not change, but the character of war remains adaptive and will reflect the environment in which it is being waged; we will have to compete in all domains – there will be no guarantees of superiority in any function or activity without the expenditure of large amounts of resources to gain and maintain it/them; adversarial materiel and force development lagging, replacement, and leading strategies will guarantee competitiveness in information technology, counter-mobility, and direct/indirect fires systems and they will not require a large industrial base to create or sustain each of these capabilities.

(2) Everything we do will strive toward Joint, Interagency, and Multinational (JIM) integration, but without a Goldwater-Nichols II type of regulation, the Department of Defense (DOD) will be forced to provide most ways and means; the best we can get is integrated ends formulation and small Inter-Agency Task Forces performing stability and reconstruction tasks, until after 2015; we will have to form coalitions, if desired, for each mission (none are guaranteed), and coalition participation will be conditional.

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[8] Congress of the United States. *A CBO Study, Options for Restructuring the Army*, (Congressional Budget Office, May 2005).

[9] U.S. Army. *How the Army Runs, A Senior Leader Reference Handbook*, 3.

(3) The near-term is the next five years, the mid-term is 6-10 years out, and the period beyond 2015 is the future-term; to get through the near- and mid-terms we will have to use systems currently available with continuous improvements to them, but no leap-ahead technology will introduce fundamentally new systems for application until after 2015.

(4) DOD will continue to strive for greater military strategic efficiencies that will impact across the DOTMLPF domains.

(5) The security environment as described in the Joint Operating Environment (JOE) document and as reflected in on-going combat and stability operations is accurate for modeling purposes – Iraqi military force tactics under Saddam Hussein was a real-world model/simulation of how an adversarial nation-state would employ its conventional forces in unconventional methods, as well as compounding with irregular forces and tactics; other nations will emulate this model while improving upon its methods, while applying greater anti-access resources to the fight.

(6) National strategic guidance will not fundamentally change in the near and mid-terms.

(7) We will continue to pursue the Global War on Terror (GWOT) with possible expansions into new theaters while attempting to draw-down forces in existing theaters; we will simultaneously engage emerging local and regional powers seeking respective hegemony.

(8) Future Combat Systems (FCS) will not be fully fielded as articulated in future concepts documents until after 2015; the legacy ground combat systems developed and fielded in the 1980s and proven in Operations Desert Storm and Iraqi Freedom (M1, M2 and M109) will continue to be modified and to serve as separate from, as well as in combination with, FCS until at least 2040.

(9) The US Army will continue to move toward joint interdependence, and the Joint Operations Concepts (JOpsC) family constitutes the overarching conceptual body in which it will

develop and maintain its forces; Army transformation will continue along its current path with an objective of being fully nested within the JOpsC.[10]

[10] U.S. Army. *TRADOC Pamphlet 525-3-0, The Army in Joint Operations – The Army's Future Force Capstone Concept 2015-2024 (Version 2.0)*, (Headquarters, U.S. Army Training and Doctrine Command, 7 April 2005).

II. STRATEGIC REQUIREMENTS – DRIVERS OF CHANGE

The National Security Environment

> Complex and adaptive adversaries will likely employ traditional, irregular, disruptive, and catastrophic methods singularly or in combinations which are intended to keep the future joint force from being successful across the range of military operations. – Capstone Concept for Joint Operations[11]

The Joint Operational Environment (JOE) – Into the Future, a comprehensive synthesis of current and future security trends, paints a picture of continued and dynamic competition and conflict across the globe. The United States will be engaged globally and in many different ways for the next couple of decades as the effects of globalization and the Information Age are fully realized. These effects will create great amounts of perceived and real deprivation, and bring about clashes of cultures and systems, and connect the world into a single interdependent economic system reliant upon sources of raw materials, cheap manufacturing processes, and guaranteed distribution of goods and services. Ideas and ideologues will clash with each other, and once irrelevant actors will suddenly become world players able to affect any one of the integrated subsystems or the global system itself. The United States, as the dominant state subsystem within the global system, will be further and further enmeshed in local, regional, and global competition and conflict that will manifest in one of many forms of warfare that targets the global system infrastructure (DIME or PMESII subsystems, depending on point of view). [12]

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[11] Department of Defense. *Capstone Concept for Joint Operations (Version 2.0),* (Office of the Joint Chiefs of Staff, August 2005), 4.

[12] Department of Defense. *Joint Warfighting Center Doctrine Pamphlet 4, Doctrinal Implications of Operational Net Assessment*, (Headquarters, U.S. Joint Forces Command, 24 February 2004). This manual describes application of national power in the realms of Diplomacy, Information, Military, and Economics (DIME) against an adversarial system's sub-components of Political, Military, Economic, Social, Information, and Infrastructure (PMESII) considerations.

The United States Government (USG), and by extension, the joint military force, may be engaged simultaneously against one or more of the three types of threats that will employ one or a combination of more than one of the four types of challenges.[13] The unconventional will become the norm, as adaptive systemic warfare becomes the prevalent form of competition and conflict around the world (as opposed to the previous paradigm of designed and systematized warfare where the military was the predominant player and form and function were predictable). This form of war could be lethal or non-lethal, temporary or terminal, using multiple combinations of the elements of systemic (vice the traditional term of national) power in different ways and means to target another system's elements of power (nodes, hubs, links, and critical processes – production, distribution, consumption, and revitalization/recapitalization within PMESII). The joint military force will be continuously engaged in an arena of competition and conflict in which it is only one of many players. The USG will employ all available means in unlimited ways within the concept of Unified Action.[14]

Joint Military Doctrine

There is an abundance of joint military force doctrine available for force and concept development. Most of this doctrine springs from the Joint Forces Command (JFCOM) or each of the services' institutions that produce their concepts and doctrine (US Army Training and Doctrine Command – TRADOC, for example). Input is also received from the various institutional centers, as well as from the operating components of each of the services. Finally,

[13] James N. Mattis and Frank Hoffman, "Future Warfare – The Rise of Hybrid Wars." (U.S. Naval Institute, *Proceedings*, November 2005). The authors write, "We expect future enemies to look at the four approaches (challenges) as a sort of menu and select a combination of techniques or tactics appealing to them." I call this 'adaptive systemic warfare' to indicate both the ever changing threat ways and means as well as the holistic approach toward warfare and competition.

[14] Department of Defense, *Capstone Concept for Joint Operations*. The concept describes Unified Action as the synergistic application of all instruments of national power and multinational power and includes the action of nonmilitary organizations as well as the military forces.

contribution to the body of concept, doctrine, and force development is received from outside sources such as military retirees, contracted individuals and groups, think tanks, and political or military professional organizations. The Joint Staff is the official repository of the joint military force's body of doctrine for the Department of Defense (DOD).

There have been many "white papers" and official position papers produced that have provided strategic direction to doctrine and force development. Some evolve from a previous edition, such as Joint Vision 2010 into Joint Vision 2020. Each of the services produces "road maps" for transformation of their forces into the joint interdependent force. And each produces capstone documents or concepts demonstrating how the service is to conduct operations as part of the joint military force in the future, such as the Army's future force capstone document.

The Joint Operating Environment (JOE) is a good base document to evaluate the security and competitive environments in which the USG and joint military force will itself operate in for the next two decades. Modeling and concept/force development is supposed to use the ideas and conclusions from this living document as the basis for all future work.[15] The JOE addresses systems and subsystems and seems to be based on reality, with very little "leap ahead" conclusions made about future USG and joint military force capabilities to deal with the threats described in the document. The Joint Operations Concepts (JOpsC) Family was developed beginning in 2003 and has grown to include the Capstone Concept for Joint Operations (CCJO), Joint Operating Concepts (JOCs), Joint Functional Concepts (JFCs), and Joint Integrating Concepts (JICs). The JOpsC is synonymous with and includes all Joint Future Concepts, but is not explicitly conclusive in regards to the Joint Capability Areas (JCAs).[16] These concepts look

[15] Department of Defense, *Capstone Concept for Joint Operations*, 2.

[16] Joint Capability Area Management Plan (JCAMP) includes functional, operational, domain, and institutional JCAs. There are Tier 1, 2, 3 (and below) JCAs. This taxonomy and associated ideas are meant to facilitate capabilities-based planning. I am not attempting to address the JCAs, but simply the concept, or capstone, documents for each area (JIC, JOC, JFC).

beyond the Future Years Defense Plan (FYDP) out to 20 years.[17] The JOpsC Family is supposed to be based upon conclusions drawn from the JOE concerning the global security environment. A brief description of each of the elements of the JOpsC Family follows[18].

The Joint Operating Concept (JOC) provides operational-level descriptions of how a Joint Force Commander will accomplish a strategic mission within the parameters of the Capstone Concept for Joint Operations (CCJO). The JOCs identify challenges and ideas for solving the challenges, effects required to achieve objectives, essential capabilities, and conditions in which to apply the joint force capabilities. The current JOCs are: Major Combat Operations (MCO), Stability Operations (SO), Strategic Deterrence (SD), and Homeland Security (HS). These are the strategic mission sets and are meant to be inclusive of the range of military operations.

The Joint Functional Capability (JFC) describes how the joint military force will perform a future mission set, or operation. They identify the required functional capabilities needed to generate the effects in each of the JOCs (mission sets) and identify attributes needed to functionally support the force. They are similar to the current Joint, Marine Corps, and Army functions (more to follow in section II). The list of JFCs includes: Battlespace Awareness (BA), Command and Control (C2), Force Application (FA), Focused Logistics (FL), Force Protection (FP). Proposed JFCs include: Net-Centric Operations (NCO), Force Management (FM), and Training. The focus of this paper is on the function of Force Application (integration of engagement/fires and maneuver)[19] and how it pertains to Army maneuver concepts and forces.

The Joint Integrating Concept (JIC) describes how a Joint Force Commander will perform his operations (mission sets, or operating concepts) or functions that are a subset of JOC and JFC capabilities. JICs break down capabilities into task level detail; they are narrowly

[17] Ibid.
[18] Ibid.
[19] Department of Defense. *Force Application Functional Concept*, (Office of the Joint Chiefs of Staff, 5 March 2004), 4.

defined operations or functions.[20] These could be the key tasks, or critical events, that must occur within each of the mission sets (JOCs); using this framework, a JIC would be an integrating mechanism for all forces and functions participating in an operation (as well as providing a means to synchronize activities and functions). The current list of JICs includes: Global Strike (GS), Joint Forcible Entry Operations (JFEO, or FEO), Joint Undersea Superiority (JUS), Integrated Air and Missile Defense (IAMD), Seabasing (SB), and those proposed – Joint Logistics (JL) and Joint Command and Control (JC2).

The joint military force must always have the capability to perform each of the JICs within the context of each mission set (JOC) – they are pervasive and persistent in nature and requirement. However, the GS and FEO concepts are ways and means to their own ends – we can conduct discrete strike operations against an adversary to have an effect on the system (node, subsystem, links, networks, etc.) as part of a campaign, or as the operation itself; FEO is the same – we conduct operations to gain access to an adversarial system to have an effect on it, and then we can follow-up with combat or stability operations. For FEO, there can be multiple entries, or a single one, and for one or more purposes.[21] However, FEO is not persistent and a general capability or activity that must be present for operational success – it is an operation (with an end) in itself. Thus GS and FEO, though critical components to the success of an operation, are also operations on their own.

A Model of the Evolved Joint Operating Concepts

> The joint force, in concert with other elements of national and multinational power, will conduct integrated, tempo-controlling actions in multiple domains concurrently to dominate any adversary, and help control any situation in support of strategic objectives. – Capstone Concept for Joint Operations[22]

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[20] Department of Defense, *Capstone Concept for Joint Operations*, 3.

[21] Department of Defense. *Joint Forcible Entry Operations Joint Integrating Concept (Version .92A3)*, (Office of the Joint Chiefs of Staff, 15 September 2004), 7.

[22] Department of Defense, *Capstone Concept for Joint Operations*, 11.

As part of Unified Action, the joint military force will be required to engage in adaptive systemic warfare when the USG requires large scale operations where there is a direct correlation between actions and effects on a rival system (the other elements of power will be utilized to conduct smaller scaled operations against rival niche capabilities and/or less direct effects on the rival system). Almost all lethal actions against a rival's military subsystem and/or systemic operations (vice subsystem, e.g., economic, political, social) with an objective of fundamental systemic change will be conducted by the joint military force. This may manifest in disruptive or destructive operations with an objective of partial (one or more of the subsystems, or temporary effects against the overall system) or complete systemic defeat (to throw a rival system off it's chosen course of action and to compel it to accept our will).[23]

The joint military force will conduct these types of operations utilizing the evolved concepts of GS, FEO, MCO, SO and Nonadversarial Crisis Response Operations (NCRO) as mission sets to implement national security strategies and policies.[24] Homeland Security (HS) is a continuous and pervasive mission set; HS doctrine and force development is continuing to evolve with the Department of Homeland Security as the lead agency and the Department of Defense supporting with Homeland Defense and Defense Support of Civil Authorities as the primary subset of supporting missions.[25] Strategic Deterrence (SD) is also much like Homeland Security – the attributes and capabilities are derived from the nation's strength as a whole, with Department of Defense providing deterrence through perceived and real ability to defeat a

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[23] Douglas J. DeLancey, "Adopting the Brigadier General (Retired) Huba was de Czege Model of Defeat Mechanisms Based on Historical Evidence and Current Need," (Fort Leavenworth, Kansas: School of Advanced Military Studies Monograph, 2001), 14-15.

[24] The CCJO recognizes "… the national security implications of operations that do not necessarily include either adversaries or combat. Examples include peacekeeping, humanitarian relief operations and support to civil authorities, both foreign and domestic." This discussion is on page 7 of the document and listed under the heading of 'Nonadversarial Crisis Response Operations'.

[25] U.S. Army. *TRADOC DCSINT Handbook No. 1.04, Defense Support of Civil Authorities*, (Deputy Chief of Staff for Intelligence, U.S. Army Training and Doctrine Command, 15 August 2005), IV-2.

potential adversary at will (time and place of choosing). Both of these require specific capabilities, actions, missions, etc. to implement them, but neither has an end point nor reliance on specific threats or policy goals – we will always secure the homeland and deter aggression against us. The elevation of the current JICs of Global Strike and Forcible Entry Operations to the JOC level would allow for better development along all joint DOTMLPF lines and ensure unity of effort as well as prioritization to these concepts.[26]

The family of operational concepts, or mission sets, should be reorganized and include:[27]

- pervasive and continuous missions that include any and all ways and means
    - homeland security (specifically Homeland Defense; Civil Support and Emergency Preparedness would shift to NCRO) – provide defense using integrated offensive and defensive measures to defeat external threats/aggression as far from the Homeland as possible;
    - strategic deterrence – prevention of adversary aggression or coercion threatening vital interests of the US and/or our national survival by means of decisive influence over their decision making;
- discrete and conditional (dependent upon policy goals, self, enemy, and terrain factors) mission sets against potential rival systems (the three threats employing one or more of the four challenges)
    - strike – as currently described, the capabilities and tasks that will be required to achieve identified effects objectives during the first ten days of an MCO campaign; expand to include singular strike operations to achieve decisive effects;

[26] Department of Defense, *Capstone Concept for Joint Operations*, 24.

[27] The description for each is summarized from the JOpsC Executive Summaries briefing dated 23 August 2005. The NCRO portion is synthesized from the CCJO.

- entry – conducted against armed opposition to gain entry into the territory of an adversary as rapidly as possible in order to enable the conduct of follow-on operations or conduct a singular operation;
- combat – compel the enemy to accede to our will by use of kinetic and non-kinetic means to achieve decisive effects;
- stabilization – providing security as well as initial humanitarian assistance, limited governance, restoration of essential public services, and other reconstruction assistance until follow-on joint military, interagency, and multinational forces and organizations can perform these functions;

- Additionally we would perform crisis response operations at home and abroad (NCRO-D, NCRO-F) that are in response to non-adversarial environmental threats and events (e.g. Hurricane Katrina and Pakistan earthquake response and relief operations).

All mission sets will be within the context of Unified Action – interagency, nongovernmental agency, private industry, and transnational governance, for planning, preparation, and execution, with variations within these sets of activities dependent upon the political situation and the availability of non-USG means. In some instances, specific actions or operations may have to be conducted solely by the USG, or even just the joint military force, dependent upon available will and means, though this should be the exception within adaptive systemic warfare.

This conceptual model of warfare has at its core the adaptive character of operations in which ways and means will continuously adapt to the situation (the holistic operating environment) to achieve the envisioned future state conditions – ends. Operating form and function would not be set (what used to be called unconventional) but will adapt to the requirements, and within this, any element of systemic power can and should employ all of the

other necessary elements of power, to achieve the stated ends. However, especially at the tactical levels, there must be some nucleus, or foundation,[28] upon which to design and build the appropriate forces that can apply the relevant capabilities for each specific environment (factors of self, enemy, and terrain – the mission). The steady core of this situational designed force is the brigade combat team (BCT), which provides some degree of predictive value of effects[29] that can be achieved through force application (this will be addressed in detail later). Simply put, an Army heavy brigade combat team (HBCT), as part of the joint military force, could employ its own assets or those of the other USG agencies and/or non-government organizations (NGOs), private industry, and transnational government capabilities (developed from assets derived from resources) to achieve USG objectives against one or more of a system's subsystems, or against the system as a whole. The nucleus – the brigade combat team, becomes the unit of action upon which the Unified Action plan is built; other functional, service, and interagency forces are plugged-in to apply the proper capabilities to achieve the desired effects.[30]

These operations can be transitional or terminal, and can be lethal or non-lethal. In this case, the HBCT would probably target the rival system's military subsystem directly with its organic assets to achieve terminal effects, while targeting other subsystems indirectly through synchronizing actions and employment of the other supporting elements of power to achieve transitional effects. To further expand upon this initial description of the evolved family of joint concepts, because the HBCT, forming the nucleus of the force application (FA) function within the MCO mission set, would most likely be the systemic defeat mechanism, it would not employ

[28] Mattis and Hoffman, 18.

[29] Department of Defense. *Force Application Functional Concept*, 14.

[30] The CCJO discussion on "Transforming Towards Unified Action" (p.25) implies that due to varying degrees of capabilities within the other USG agencies, DoD must retain the ability to operate effectively on its own; I call this the 'Ends-Ways-Means Gap Analysis', where there is a continuum along which the military finds itself planning and executing any or all of the elements of systemic power actions to achieve desired effects. Optimal is for full harmonization, integration, and synchronization of the Unified Action members; current reality is the military providing most of the ways and means and only minimally coordinated ends.

a large amount of non-lethal and non-joint military force assets. The follow-on forces of the Stryker Brigade Combat Team (SBCT) and the Infantry Brigade Combat Team (IBCT) would progressively employ more and more non-military and then non-USG assets as the mission requirements transition from disrupt and defeat (HBCT), to secure and hold (SBCT), to stabilize and restore (IBCT) types of effects and actions. This force would conduct more engagement and less maneuver activities as the capability required within the environmental setting changes through the transition from MCO to SO. The described sequence would not occur in every instance, as there would be times when only a security or stabilization force is needed, or when the USG has determined that it wants to only achieve an element of the effect of defeat (e.g. with certain rival capabilities destroyed, or a rival's center of gravity disrupted) without following-up with stabilization or reconstruction efforts. Expansion of this framework and concept will continue in later sections of this paper.

Conclusion

The purpose of the future Army BCT-centric maneuver force will be to form the nucleus of the Force Application (FA) function of the future joint military (and interagency) force, mission-oriented on the operational concepts of Major Combat Operations (MCO), Stability Operations (SO), and supporting USMC formations in Forcible Entry Operations (FEO). Additionally, Army National Guard brigades would become the primary Force Application operating force for the Non-Adversarial Crisis Response Operations (NCRO) set of missions (domestic, as well as foreign where there is either no significant threat to the force, or other land forces provide security to allow for NCRO activities to occur). The Reserve Component would additionally provide the bulk of Homeland Defense requirements in support of the Homeland Security (HS) operational concept. The entire force (Joint and interagency) provides the capabilities inherent to achieve Strategic Deterrence.

III. WHAT WE HAVE AND CURRENT DEVELOPMENTS

Armor and Infantry Branches

A branch is a grouping of officers that comprises an arm or service of the Army in which, as a minimum, officers are commissioned, assigned, developed and promoted through their company grade years.[31] A functional area is a grouping of officers by technical specialty or skill, which usually requires significant education, training and experience.[32] The Army structures company and field grade officers in the Army Competitive Category (ACC) by grouping branches and related functional areas into personnel management categories called career fields.[33] Infantry and Armor are two separate branches, both of which (along with some others) fall within the Combat Arms category of branches and within the Operations Career Field.

Department of the Army Pamphlet (DA PAM) 600-3, Commissioned Officer Development and Career Management, states the, "Armor Branch encompasses Armor or combined arms organizations that close with and destroy the enemy using fire, maneuver and shock effect; and cavalry and reconnaissance organizations that perform reconnaissance, provide security and engage in the full spectrum of combat operations."[34] The pamphlet describes the functions of the branch where Armor fulfills its mission by:

- commanding, directing and controlling mounted maneuver, combined arms organizations;
- providing expertise on the employment of combined arms forces at all staff levels; and

[31] U.S. Army. *Department of the Army Pamphlet 600-3, Commissioned Officer Development and Career Management* (Headquarters, Department of the Army, 28 December 2005), 52.
[32] Ibid., 53.
[33] Ibid., 52.
[34] Ibid., 66.

- developing the doctrine, organizations, training, materiel and leaders (DOTML) necessary to support the mounted maneuver mission[35]

The current security environment (as described in the JOE), the national security strategy, and subsequent Army military strategies, as well as ongoing transformation goals, have created the need for combined arms maneuver formations at the lowest levels. Current force design implements this at the battalion level (the combined arms battalion within a heavy brigade combat team – HBCT), though in Operation Iraqi Freedom (OIF) and other operating environments some units are task organizing in a combined arms method at company and even platoon levels. "This will drive an increased focus on mounted maneuver operations for company grade officers, transitioning to a combined and Joint operational focus for field grade officers."[36] Finally, as DA PAM 600-3 states, "The initial focus of Armor officers is the development of technical and tactical armor and reconnaissance skills. Following the initial focus on Armor and Cavalry skills development, Armor officers begin to develop a broader focus on mounted maneuver, combined arms and Joint warfare as they progress through their careers."

DA PAM 600-3 describes the Infantry purpose as "… the combat arms branch with the mission to close with and destroy the enemy by means of fire and movement to defeat or capture him, or repel his assault by fire, close combat and counterattack."[37] While the Armor Branch section of DA PAM 600-3 speaks of transformation of the branch, or "The Way Ahead", the Infantry Branch's unique culture is addressed – "the Infantry culture is the basis for the Army's Warrior Ethos, and it is derived from the harsh realities of Infantry combat, which are close, personal, and brutal… although Infantry officers are assigned to vehicular and non-vehicular organizations comprised of light, mechanized, airborne, ranger, air assault and Stryker formations within Heavy, Infantry and Stryker Brigade Combat Teams, all infantrymen are linked through

[35] Ibid., 66.
[36] Ibid., 66.
[37] Ibid., 57.

the core competency to close with and destroy the enemy in ground combat. Infantry officers must understand the characteristics of each type of infantry, with the understanding that what differentiates them are the means of delivery to the battlefield."[38] The pamphlet describes the functions of Infantry Branch:

- Infantry leaders are expected to synchronize all elements of combat power on the battlefield to defeat the enemy
- Infantry officers are prepared to train, lead, and employ all types of Infantry and other combat arms assets on the battlefield in the full spectrum of military operations
- the Infantry arrives on the battlefield by parachute assault, air assault (helicopter insertion), mechanized vehicle, wheeled vehicle or on foot; insertion means are dependent upon the mission, enemy, terrain and weather, and time available[39]

The Armor Branch information listed in DA PAM 600-3 for features of the branch focus on the three areas of concentration (AOC) – Armor generalist (staff positions requiring either armor or cavalry experience and knowledge), Armor, and Cavalry. The Infantry Branch listed features include – Command and control of Infantry and combined arms forces in combat, and provide coordination for employment of combat arms forces at all levels of Joint, Army, and coalition commands. The remainder of "unique" features includes the combat development and other institutional activities that are also generally listed under the Armor Branch section of features of the branch.

Both branches include the aspects of features, functions, and purpose in describing themselves in DA PAM 600-3. Armor includes a section on transformation, while Infantry chooses to discuss the unique culture of the branch. Additionally, Infantry attempts to describe

[38] Ibid., 57.
[39] Ibid., 57.

many types of Infantry under the heading of "One Infantry"[40], to minimize the differences; separate and unique skills are listed and not correlated with a type of infantry officer. Armor branch, on the other hand, lists the areas of concentration and three unique skills (M1A2 Abrams tank, M1A1 Abrams tank, and M2/M3 Bradley CFV/IFV)[41] that are correlated with skills, positions and organizations. The Infantry highlights that after using various forms of tactical deployment (through platform means, e.g. airplane, helicopter, wheeled vehicle) all infantrymen are the same for employment – to close with and destroy the enemy by means of fire and movement to defeat or capture him, or repel his assault by fire, close combat and counterattack. By definition Armor branch has at least two missions – to close with and destroy the enemy (through various ways and means), and to conduct reconnaissance and security and engage in the full spectrum of combat operations using cavalry and reconnaissance organizations. Armor branch goes as far as to include 'combined arms organizations' as part of the branch structure to accomplish the first stated purpose.[42] Finally, no where does Infantry branch state a purpose, function, or feature of reconnaissance operations (though DA PAM 600-3 does include Infantry as the proponent of RSTA/Long Range Surveillance Leader as an individual skill).

A fundamental conclusion to be drawn from this discussion is that the institutional Armor considers the platform as central to achieving its purpose, and in fact, in determining the purpose (twofold – armor and cavalry), whereas the institutional Infantry considers the platform as merely a means of delivery to the battlefield – critical for tactical mobility or movement, but not in its employment to achieve the stated purpose. In Armor, tactical mobility means are generally equal to tactical employment ways, e.g., the tank gets the Armor crew to the fight (movement) and through the fight (employment through a combination of fire and maneuver) to the objective (ends). Additionally, one could surmise that Infantry considers reconnaissance as something

[40] Ibid., 57.
[41] Ibid., 67.
[42] Ibid., 67.

done internally and in support of the overall mission, and Armor considers reconnaissance as both an internal activity (a shaping operation conducted by cavalry forces that provides intelligence to the main body) as well as a separate mission conducted for a higher organization or as an ends to itself. However, the greater similarities between Armor and Infantry suggest that the two branches have a very similar function – maneuver, and that only the differences in tactical mobility (or movement) and employment separate the two (notwithstanding the reconnaissance mission, which is to be treated separately).

Heavy and Light Forces

Army Field Manual (FM) 3-90, Tactics, is the common reference for all students of the tactical art, both in the field (operating forces) and within the Army's schools (generating force). It focuses on the tactics – the art and science of employing all available means to win battles and engagements, of modern warfare and is linked to the operational level of war by nesting concepts and execution systems found within FM 3-0, Operations.[43] FM 3-90 details tactical fundamentals, common concepts, and the basics of offensive, defensive, and tactical enabling operations. The manual also describes the Army's branches and forces[44], by tactical echelon, in support of each of the types of missions. This manual is the main link between the institutional Army and the operating Army in regards to doctrine, which should drive development within each of the other domains of DOTMLPF.

FM 3-90 describes the grouping of Army force structure into three broad categories – Combat, Combat Support (CS), and Combat Service Support (CSS). This is the same grouping used by DA PAM 600-3 placing Armor and Infantry branches into the 'Combat Arms' grouping (but without the use of career fields, such as Operations, which is strictly for assignments and

[43] U.S. Army. *Field Manual 3-90, Tactics*, (Headquarters, Department of the Army, July 2001), xiii.

[44] The DOD Dictionary of Military Terms defines force as, "An aggregation of military personnel, weapon systems, equipment, and necessary support, or combination thereof."

career development). The groupings assist in classifying each of the over 400 types of units in the Army, each of which incorporates varying degrees of lethality, survivability, etc.[45] More importantly, the manual states that, "Appropriate combinations provide a balanced and versatile force mix, maximizing the commander's freedom of action in any…condition."[46] The critical element is the ability of the commander to understand the environmental (self, enemy, terrain) requirements and to apply the capabilities within his means – this includes all systems (such as M1 tanks, M2 Infantry Fighting Vehicles, and infantry squads), as well as functions, in unique ways to dominate the situation. The ability to do this comes from years of experience, as well as years of schooling, within the art and science of combined arms warfare. Within the modern complex security environment, however, it is not enough to just add complementary combat arms, or groupings of other units or branch capabilities – there must be a deeper level of understanding and application of these forces and it must come from a common foundation. That is hard enough for a seasoned battalion commander. However, platoon leaders are now being asked to perform tasks that incorporate many of the other elements of power (DIME construct) at the tactical level, as well as to conduct combined arms maneuver and engagements[47]. The preparation of this young leader must begin in the Army schools, and it should include all of the forces and systems that comprise Army maneuver. That education should continue when he gets to his unit and goes through a focused Unit Life Cycle mission preparation that would tailor the unit through design (across the DOTMLPF domains) and demonstrate these capabilities in training prior to deployment. More about this preparation process will be addressed in following sections of this paper. Additional information concerning the combat arms capabilities, inherent in the Army maneuver forces and developed by the Armor and Infantry branches, is necessary.

[45] U.S. Army. *Field Manual 3-90*, A-1.
[46] Ibid., A-1.
[47] Ibid., A-1.

FM 3-90 provides some concise information on the heavy and light forces as well as the branch components in regards to fielded forces. The "heavy forces employ a combination of armored and mechanized forces that use their tactical mobility, protection, and firepower to close with and destroy the enemy, seize and hold terrain, and conduct reconnaissance…form the nucleus of a combined arms team to…create tremendous shock effect."[48] The ability to seize and hold terrain is provided through the use of dismounted infantry, either from within the mechanized units, or by attached light infantry forces.[49] This is not a component of the Armor mission statement and purpose as identified by DA PAM 600-3.

FM 3-90 continues with "…light forces close with and destroy the enemy, seize and hold terrain, and gain information…light forces are limited by the relative lack of protection …and limited firepower compared with heavy forces. They also have limited organic tactical mobility once deployed into an area of operations."[50] Tactical mobility is provided by the current platforms that comprise the different types of infantry battalions – air assault (helicopter), airborne (airplane), light (some cargo truck assets), and motorized (Stryker family of vehicles). Infantry Brigade Combat Teams are made up solely of the same types of infantry battalions plus reconnaissance battalions with mounted and dismounted troops organic to them. Note that FM 3-90 separates the mechanized infantry from the other types of infantry, notwithstanding their dismounted infantry squads that could be considered 'light' once employed from the M2 vehicle, which is officially considered an infantry support vehicle. Also note that while the capability of the light forces includes missions that are very similar to those listed in DA PAM 600-3, there is specifically no mention of reconnaissance again. 'Gain information' as a task is an element of the reconnaissance mission. The mission itself is apparently being left up to armor or cavalry to complete for the higher unit.

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[48] Ibid., A-2.

[49] Robert R. Leonhard, *The Art of Maneuver: Maneuver Warfare Theory and AirLand Battle*, (Novato, California: Presidio Press, 1991), 93.

[50] U.S. Army, *Field Manual 3-90*, A-2, A-3.

This hole in tactical doctrine is changing with the publishing of modularity doctrine, specifically for the heavy brigade combat team (HBCT), and with the reconnaissance battalion manuals being nearly completed. Most important is that the institutional force – the current branches and the future Maneuver Branch, determines that reconnaissance is a mission and a capability required at every level of warfighting and organization, and that its very nature is very closely related to the type of unit(s) that the unit performing it is organic to or working for, and of the environment in which it is being performed. The design of these units must be deliberate, and also go through specific DOTMLPF resourcing as part of mission preparation within the Unit Life Cycle phases.

The complementary capabilities found within the branches of Engineer, Field Artillery, Aviation, and Field Artillery are also listed in FM 3-90, however, they are not included in the descriptions of the purpose and general operating methods of the heavy and light forces. Today it is very hard to separate some of these capabilities from maneuver forces, and indeed the new BCT organizational designs include engineers within the 'maneuver' battalions (in HBCTs) and artillery within all of the BCTs. Operating concept design and employment techniques for these other 'arms' are now being developed within the BCTs, in the operating force, and being reported back to the appropriate institutional force schools upon refinement in the field. This is also true for employment of infantry, armor, and reconnaissance forces; however, the lessons learned currently go back to the branch schools, not to a common center for refinement, study, and possible further application throughout the DOTMLPF domains. There is no official channel for the sharing of these operating force tactics, techniques, and procedures (TTPs) between Armor and Infantry branches. Again, this is changing, mostly at local levels, but there is no formal process to conduct formal continuous improvement of BCTs getting prepared for deployment and employment in the field. A central Maneuver Center housing both the Army Maneuver Branch (institutional/generating) and Army Maneuver Forces (operating) should be this repository and change agent.

The Brigade-Centric Army

The Army is now designed to field and employ brigades and BCTs that achieve decisive effects to achieve mission success. These units can work either directly for Army divisions and corps providing command and control or for other sister service components, and all for the Joint Force Commander (JFC). The brigades support tactical actions of the BCTs, as well as provide theater and operational level combat, combat support, and combat service support to Army and Joint forces operating in worldwide missions. Primarily there are five types of tactical, or direct, 'support' brigades – combat aviation, battlefield surveillance, sustainment, maneuver enhancement (combat support), and fires. There are currently eight types of functional brigades that can either provide 'direct' support to BCTs or to the division, or can provide 'general' support to multiple divisions or other units employed within a theater of operations, to include Joint forces. These eight types of functional brigade include: engineer, military police, chemical, air defense artillery, signal, explosive ordnance disposal, medical, and quartermaster. Finally, there are brigades that operate (or, are employed) at the theater level and primarily to fulfill the Army Service Component Commander (ASCC) requirements. Some of these brigades include civil affairs, network control, military intelligence, medical and sustainment. Most of these last categories of brigades have existed for some time, but the Army is refining their structures and attributes (e.g. language skills) to better support specific theater and regional combatant command needs.

Army and Joint Design – Functional Systems

FMI 5-0.1 introduces the concept of warfighting functions to the Army, long used by the Marine Corps as an integrating mechanism in planning and execution.[51] Army warfighting functions combine the elements of combat power (information, leadership, maneuver, and fire

[51] U.S. Marine Corps. *Marine Corps Warfighting Publication 5-1, Marine Corps Planning Process,* (Headquarters, U.S. Marine Corps, 24 September 2001), B-1.

power)[52] with the Battlefield Operating Systems (BOS) – maneuver, fire support, air defense, mobility/counter-mobility/survivability, combat service support, command and control, and intelligence (see Figure 1). The synthesis of the old operating systems and elements of combat power into a new functional design allows for better alignment with Joint concepts, synchronization of operations, and development of future forces. This is critical toward successful execution of land operations.[53] The manual defines a warfighting function as a group of tasks and systems (people, organization, information, and processes) united by a common purpose that commanders use to accomplish missions and training objectives.[54] The warfighting functions are – Movement and Maneuver, Intelligence, Fires, Sustainment, Command and Control, and Protection. The Army and joint force functions are now the same in name and very similar by definition as well. United States Marine Corps (USMC) functions are very similar, with the exception of naming Maneuver without the element of 'Movement' found in the Army definition, adding Force to Protection (USMC function of Force Protection), and calling it Logistics instead of Sustainment (Army function).

FMI 5-0.1 defines the function of Movement and Maneuver as, "the related tasks and systems that move forces to achieve a position of advantage in relation to the enemy. This function includes those tasks associated with employing forces in combination with direct fire or fire potential (maneuver), force projection (movement), and mobility and counter-mobility."[55]

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[52] U.S. Army. *Field Manual 3-0, Operations* (Headquarters, Department of the Army, June 2001). FM 3-0 defines the maneuver element of combat power as, "the employment of forces, through movement combined with fire or fire potential, to achieve a position of advantage with respect to the enemy to accomplish the mission. Maneuver is the means by which commanders concentrate combat power to achieve surprise, shock, momentum and dominance." The manual defines firepower as, "the amount of fires that a position, unit, or weapons system can deliver. Fires are effects of lethal and non-lethal weapons. Fires include fire support functions used separately from or in combination with maneuver."

[53] U.S. Army. *Field Manual Interim 5-0.1, The Operations Process*, (Headquarters, Department of the Army, March 2006), A-1.

[54] Ibid., A-1.

[55] Ibid., A-2. I inserted the terms 'maneuver' and 'movement' as descriptors of fire potential and force projection, respectively.

This definition squarely places the elements of ground combat maneuver together under one system, whereas in the past mobility and counter-mobility were under a different battlefield operating system[56] and under the Engineer Corps proponent. In this example, the relationship between the infantry and armor forces and the engineers providing a mobility capability is closely related so that they are now within the same function, and found together in the same units (a combat engineer company is now organic to every combined arms battalion within the HBCT). Brigadier General (Retired) Huba was de Czege, in a monograph written in 1984, illustrates this relationship between the elements of combat power and the warfighting functions:

> Effective tactical maneuver consists of the ability to engage the enemy or avoid engagement in such a way as to maximize the effects of friendly firepower and minimize the effects of enemy firepower…operational level maneuver consists of the ability to position forces in such a way as to tip the local combat power balance in ones favor…it is thus a function of unit mobility, effective tactical analysis, effective management of resources, and effective command, control, communications.[57]

Though the Engineer Corps is still proponent for mobility (within the institutional Maneuver Support Center and the Engineer School), the operating responsibility for tactical employment and concept design falls under the HBCTs; a formal move for institutional development to the Maneuver Center may not be too far away. In this manner, many of the very closely related tasks, activities, and functions that enable maneuver to occur on the battlefield in support of close combat may migrate, first for tactical employment concept development, then to full institutional development, to the Maneuver Center. Once institutional development responsibility shifts, then defining attributes and qualities of the branch(es) could shift as well.

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[56] U.S. Army. *Field Manual 3-90*, 2-5. The manual describes the previous battlefield operating system (BOS) components of mobility – preserve the freedom of maneuver of friendly forces, and countermobility – deny mobility to enemy forces. The remaining component of this BOS, survivability – operations (to) protect friendly forces from the effects of enemy weapon systems, is no longer associated as a separate set of tactical actions, but inherent in all of the warfighting functions and through better system (or weapon platform) design.

[57] Huba was de Czege, "Understanding and Developing Combat Power," *Unpublished Paper*, (U.S. Army Command and General Staff College, Fort Leavenworth, Kansas: 10 February 1984), 18.

The endgame for this would be a redesign of all of the former branches into functional designs, such as what is occurring with the new Maneuver Center and Network Fires Center, and the already established Maneuver Support Center. This would ultimately change the nature of our Army force, with more emphasis on function over branch (what you do and where in the battle space you do it would create a greater affiliation with other like individuals and organizations than artificial organizational designs).

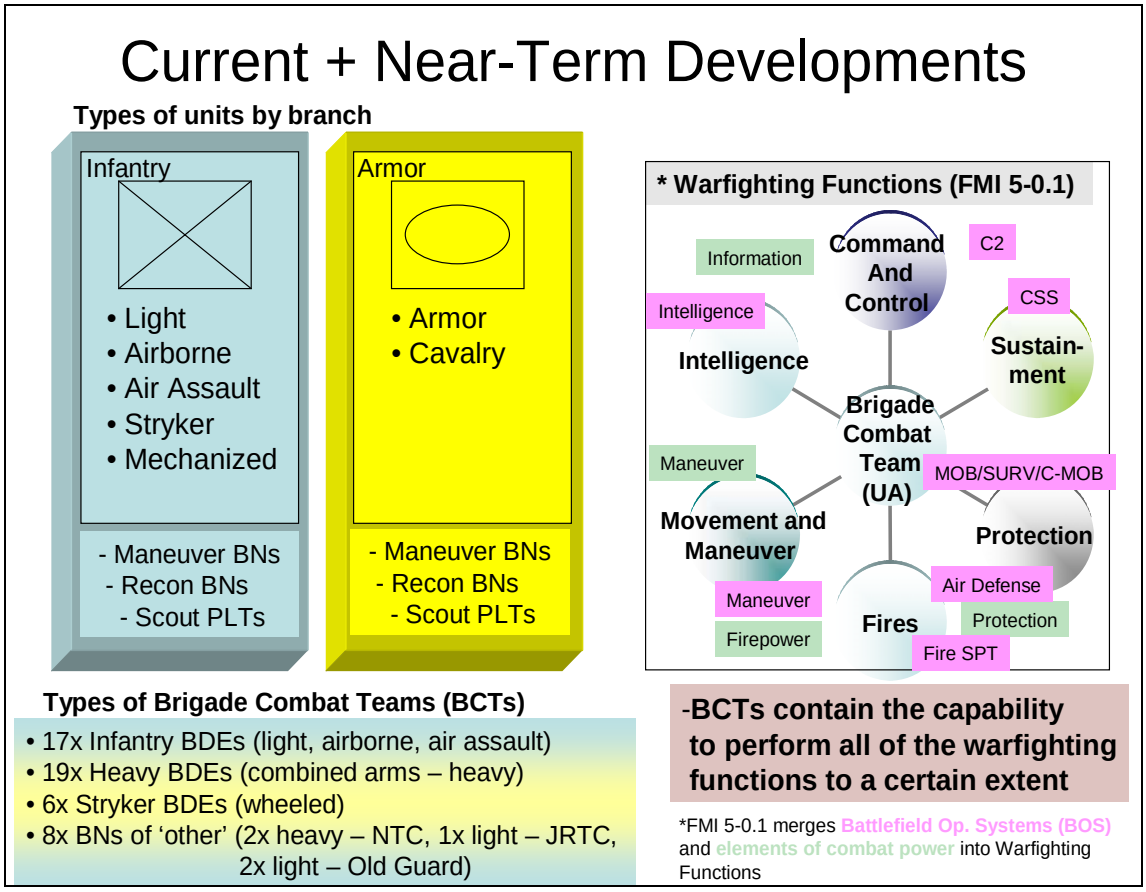

Figure 1: Current Migration of Armor and Infantry Branches and Forces into the Maneuver Function and Forces (O'Brien)

The joint concept and emerging function of Force Application is analogous to this convergence of function over branch design. To summarize, Force Application is the integrated use of maneuver and engagement to create the effects necessary to achieve assigned mission

objectives.[58] The Joint definition of maneuver is very similar to the Army one previously described; engagement is described as the use of kinetic and non-kinetic means to generate the desired lethal and/or non-lethal effects.[59] Greater clarification and description of the evolution of the Army's Fires and Maneuver functions into the joint Force Application function will be discussed in a later section. A conclusion can be made that the US military is organizing along functional lines for concept and force development. This allows for the integration of all systems to achieve unity of effort and focus in planning [60] and provides a simplified construct as a tool for synchronizing operations.[61] As strategic guidance and strategy documents continue to evolve, the Army maneuver forces must develop along with them. The other services already organize along functional lines, the Army must continue to follow suit. Once this is done the Army will be better aligned within joint concept development and this will help in the "realization that everything done in this Department must contribute to joint warfighting capability" and not contributing only toward development of a single Army branch. [62]

Combined Arms Warfare, Defeat Mechanisms, and Doctrine

> …Marcone sent his scouts out first to develop the situation. The scouts immediately got into a fight beyond their means to win. The enemy had positioned a battalion of infantry on the western approaches to the bridges at PEACH. There were also elements of an enemy reconnaissance battalion in the area. Marcone committed his Alpha Company to clear the zone along the river up to the near side of the crossing site and used his mortars to support the assault to the crossing site. 1-41 Field Artillery Battalion moved with and fired in direct support of TF 3-69 AR. Marcone also had a company of Apaches flying in support of his assault…Marcone's Alpha Company "scraped" the enemy off the northwest bank while Captain Todd Kelly's troopers of Team C/2-7 IN secured the near side of the bridge and swept the eastern bank of enemy forces. Team C/3-69 AR and Team B/3-7 IN staged and prepared to assault the far side of the crossing site when called upon…The Iraqis still had one card to play. As the

[58] Department of Defense. *Force Application Functional Concept*, 10.
[59] Ibid., 11.
[60] U.S. Marine Corps. *Marine Corps Warfighting Publication 5-1*, B-1.
[61] U.S. Army. *Field Manual Interim 5-0.1*, A-1.
[62] Department of Defense. *Quadrennial Defense Review Report*, (Department of Defense, 6 February 2006), vi.

> assault force went in, the Iraqis fired perhaps as many as 200 152mm howitzers rounds on the near side support-by-fire position from which Team A/3-69AR supported the assault…The tank company/ team moved out without injury, but all of its tanks and Bradleys had scars…(the) tank company team moved from its support-by-fire position and assaulted over the canal bridge and through Objective CLINTON to support-by-fire position A6, north of the canal. Marcone retained a force composed of dismounted infantry and engineers to defend the Euphrates (River) bridge. – "On Point: The United States Army in Operation Iraqi Freedom" [63]

Combined Arms Warfare

The concept of combining two or more assets to create a greater set of capabilities to conduct war has been around since man started to desire that which he did not have. Ancient armies combined long spears and phalanx formations to counter enemy mounted and dismounted warriors.[64] Dr. John House writes in "Combined Arms Warfare in the Twentieth Century" that the term combined arms means different things to different people – combinations of weapons to maximize effectiveness and survival, organizations to command and control, and/or actual roles performed and techniques applied relating to each of the types of combat arms, or force, in the battlespace.[65] House's discussion on 'orchestrating the battle' is important as well. To him, orchestration is producing effective battlefield interaction – this could be interpreted as the marrying of ends, ways, and means. House says that this orchestration requires organization and doctrine, training, command, control, and communications, and motivation. A trend that he notes is that the growing complexity of combat has forced armies to depend increasingly on the judgment and abilities of junior leaders; this was written prior to the emergence of Information Age requirements and the global security situation that has made the operating environment even more complex and complicated for these junior leaders.

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[63] Gregory Fontenot, E.J. Degan, and David Tohn, *On Point – The United States Army in Operation Iraqi Freedom.* (Fort Leavenworth, Kansas: Combat Studies Institute Press, 2004), 289.

[64] Jonathon M. House, 2.

[65] Ibid., 4-5.

"Combined arms is the synchronized or simultaneous application of several arms – such as infantry, armor, artillery, engineers…to achieve an effect on the enemy that is greater than if each arm was used against the enemy separately or in sequence (FM 3-0)…no single action, weapon, branch, or arm of service generates sufficient power to achieve the effects required to dominate an opponent."[66] In the past commanders had to task organize their units using subordinate and attached organizations to create capabilities that would achieve the desired effect within the environment (factors of self, enemy, and terrain). Illustrated in the Operation Iraqi Freedom vignette at the Euphrates River bridge battle (known as Objective Peach), Lieutenant Colonel Marcone's battalion task force was organized with two mechanized infantry companies, two tank companies, a combat engineer company, and the battalion headquarters company with organic mortar, scout, medical, support, maintenance platoons and the battalion headquarters. This force was also received direct fire support from a battalion of Paladin howitzers and an Apache attack helicopter company, as well as priority of fires from the brigade combat team and enablers from division and corps. LTC Marcone had experience from years at the combat training centers and various assignments, and was himself an infantryman (first enlisted, then as a junior officer before branch transferring) and an armor officer.[67] He was the right man for this fight, but the Army will not always have this sort of experience and education in its commanders if there is no design for this. Huba was de Czege wrote that, "…sometime in the career of an officer he must gain an understanding of how the various military functions interrelate and contribute to combat power." He adds to this that the conversion of potential power to combat power is largely a result of intangible factors that have historically differentiated armies and their

[66] U.S. Army. *Field Manual 3-90*, 2-6.

[67] From "On Point – The United States Army in Operation Iraqi Freedom", as well as from my personal and professional relationship with LTC Marcone during our assignment with 3-69 Armor at Fort Stewart, Georgia and in Iraq.

forces – those of training, motivation, leadership and purpose.[68] We must strive and design for these professional qualities in our leaders and organizations.

Defeat Mechanisms

There is much written about defeat mechanisms, and their uses within military planning and execution. A defeat mechanism can be an activity, set of actions, pattern, and/or several types or forms of operations that lead to the defeat of an opponent.[69] Historical and theoretical examples of defeat mechanisms include: Hans Delbruck – attrition (achieve objectives through balancing maneuver and battle) and annihilation (through complete destruction of the opponent's force); Robert Leonhard – preemption (defeat of the enemy without having to fight), dislocation (render the enemy's strength irrelevant), and disruption (paralyze the enemy by attacking his critical vulnerability).[70] Huba wass de Czege's model includes attrition (emphasis of physical dimension of war), dislocation (focus on enemy leadership and rendering plans and options irrelevant), and disintegration (attacking the state of mind of the enemy). This latter defeat mechanism, "…relies heavily on the destructive and shock effects fire, followed closely by ground assaults. Lethal and non-lethal effects can combine to produce synergy for the assault. Without well coordinated and timed assaults, the disintegration can become attrition."[71] Complementary definitions of defeat mechanisms come from Dr. James Schneider's 'cybershock' (paralysis of the enemy's C4I network) as well as firepower- and maneuver-based aspects of destruction, disruption, and dislocation.[72] The latter consists only of maneuver-centric actions, or at least relies heavily on the ability to conduct movement into a position of advantage. Finally, the U.S. Army includes the defeat mechanisms of destruction, dislocation, and disintegration in

[68] Huba was de Czege, 7.
[69] Douglas J. DeLancey, 9.
[70] Robert R. Leonhard.
[71] Douglas J. DeLancey, 25.
[72] Ibid., 15-18.

its emerging doctrine (though 'attrition' is included in lieu of 'destruction' in the discussion of defeat mechanisms at the BCT level).[73]

Regardless of which mechanisms are accepted, the critical aspect is the relevance to planning, force tailoring, and task organizing that combinations of defeat mechanisms bring to bear upon the modern battlefield. When formations are created to conduct specified actions and to achieve effects, they will typically attack or defend their own ability as well as the enemy's ability to move, protect, and strike.[74] This relationship between the three basic battlefield actions and task organization is analogous to the relationship between defeat mechanism(s) and force tailoring, and in fact, each must be considered as part of the other. This is the intimate knowledge of mission and capabilities that our commanders and planners must possess, and that comes from expertise of maneuver as gained through experience, training, and education. A deliberate method to gaining this ability is by design through the Army Maneuver Center.

[73] U.S. Army. *Army Comprehensive Guide to Modularity (Version 1.0),* 1-4.

[74] Marvin A. Hedstrom, Jr, "Limited War in the Precision Engagement Era: The Balance Between Dominant Maneuver and Precision Engagement" (Fort Leavenworth, Kansas: School of Advanced Military Studies Monograph, 2001), 35.

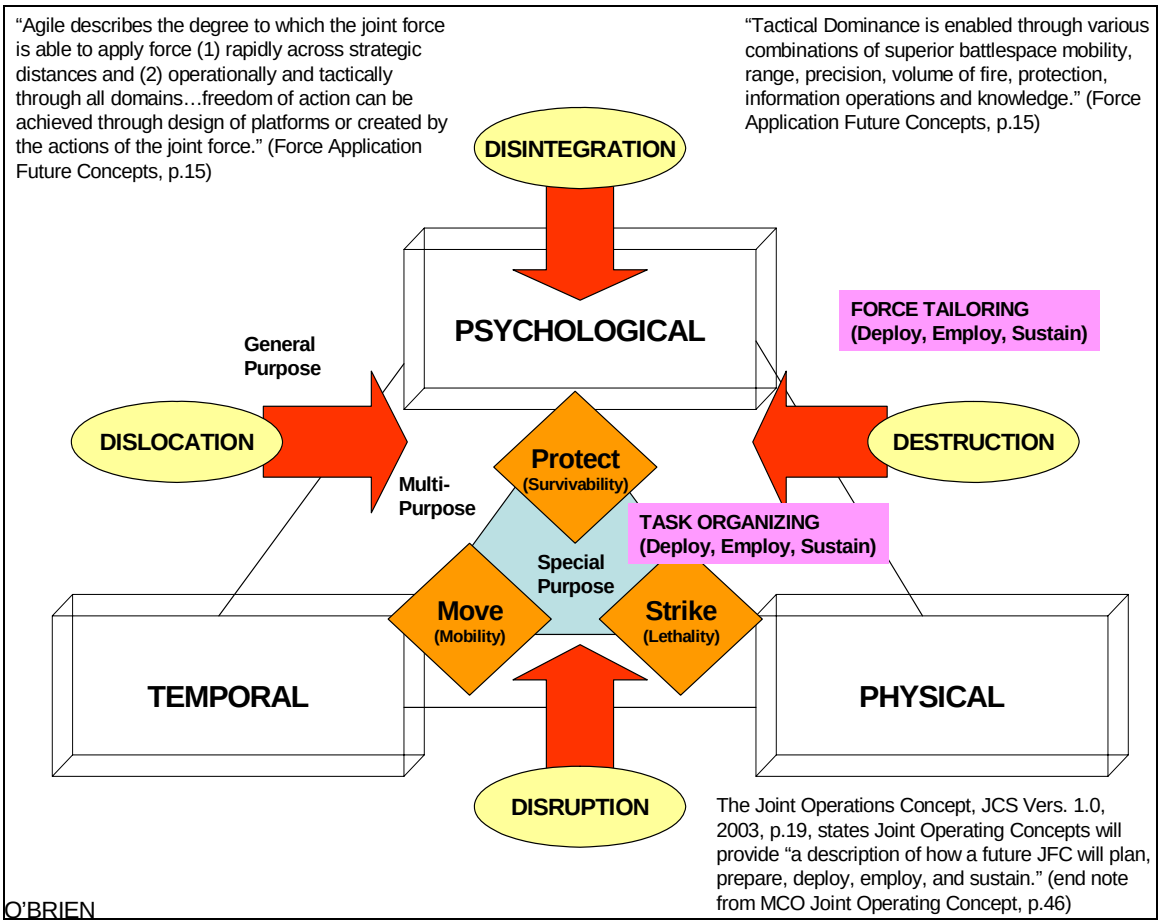

Figure 1: Synthesis of Defeat Effects, Unit Actions, and Designing the Force for the Battle Space (O'Brien)

On Maneuver, Maneuver Warfare, and Doctrine

Robert Leonhard frames his theory of maneuver in "The Art of Maneuver" as taking the onus away from striking the enemy strength as center of gravity and to exploiting his weakness, or critical vulnerability, as center of gravity (the former is known as 'King Theory', the latter as 'Queen Theory'). The Queen and King Theory piece can also be recast into a discussion of seeking opportunity versus mitigating risk – normally the considerations for employment of reserve forces. He also stresses the psychological over the physical domains of war as decisive (while retaining the option to destroy enemy capabilities – attrition, or destructive warfare, as needed as part of the psychology of the battlespace). Leonhard also embraces Richard Simpkins' studies of physics in relation to psychology, to determine critical elements that can be expressed

in terms of mass, momentum, force, acceleration, velocity, as well as enemy and friendly morale. His theory of maneuver can be summarized as, "Mass propelled with vectored speed through enemy weakness toward the moral center of gravity causing the defeat phenomenon."[75] Finally, Leonhard's Combined Arms Theory posits that at the tactical level the best combinations of the various combat arms, or forces, will continuously present the enemy with dilemmas that cannot be solved, thus achieving functional dislocation by making the enemy's capabilities irrelevant because he cannot counterstroke the friendly force's maneuver.[76]

There are many perspectives on maneuver, maneuver warfare, and the relationship between both. The United States Army and Marine Corps each build formations around the function of maneuver, yet only the Marines have a doctrine of maneuver warfare. The Army uses maneuver to position forces and increase the effects of fires, as well as position forces to enable an attack or assault. Maneuver is also used to, "…close with and destroy the enemy by close combat and shock effect…close combat defeats or destroys enemy forces, or seizes and retains ground…close combat encompasses all actions that place friendly forces in immediate contact with the enemy where the commander uses direct fire and movement in combination."[77] This description of maneuver from the Army doctrinal capstone tactical manual highlights the close combat that must occur for our forces to compel the enemy to accept our terms and his own defeat. Both heavy and light forces can do this, though light forces are optimal for retaining the ground fought for – controlling operations to seize and retain land to enable a transition to stability and some form of reconstruction operations.

The combination of fires and effects in close combat was discussed earlier; the commander must have a higher level of expertise to understand and apply all means and ways available to him to achieve specified ends, especially in the complex security environment that

[75] Robert R. Leonhard, 79-88.
[76] Ibid., 92.
[77] U.S. Army. *Field Manual 3-90,* 3-35.

requires Joint and interagency solutions. This also illustrates what some have proposed as the two core competencies of the Army – developing adaptive, mentally agile leaders, and closing with and destroying the enemy.[78] To maintain these sources of strength we must have a deliberate approach to providing the expertise required to combine all of the capabilities found within the Combined Arms Battalion and Brigade Combat Teams – this approach should have at its core the Army Maneuver Center.

Summary

For all of the discussion on the combat arms, maneuver system/function, forces, and defeat mechanisms, the United States Army really does not have a doctrine of maneuver, or maneuver warfare. There exists the maneuver system, but not a system of maneuver. All of the various inputs are exactly that – inputs to a general purpose doctrine called Full Spectrum Operations (or Full Spectrum Dominance, depending on how Army capstone documents get translated into actual doctrine). Systems, or functions, are not elevated above another, though maneuver BCTs are the organizations that the Army uses to achieve dominant land effects for the joint force commander. And though the Army has been criticized for being 'maneuver centric' in developing its BCTs, it should be remembered that it is the BCT that is the primary ways and means of land controlling operations within the Family of Joint Operations Concepts.

Even if the predominant form of warfare over the next five to twenty years will be stability operations (in the broadest terms, to include counterinsurgency, security operations, humanitarian assistance, etc.), the Army should define how the Maneuver Forces will operate within this mission set, as well as within the more kinetic forms of warfare including major combat operations, forcible entry operations, global strike, and strategic deterrence (the latter which can be translated as portraying the ability to do anything and everything to an adversary –

[78] Frederick S. Rudesheim, "Discovering the Army's Core Competencies" (Carlisle Barracks, Pennsylvania: U.S. Army War College Strategic Research Project, 19 March 2001), 35.

the ultimate example of Leonhard's preemption mechanism of defeat). The former mission set would have more limited forms of maneuver warfare, probably nodal in scope and surgical in execution (attributes of the light force), whereas the latter mission set, when it happens, would be more systemic or network in scope with general (high intensity) and precision execution conditions (medium to heavy force attributes). Neither mission set precludes use of any type of force (heavy, medium, light – manifested in current types of BCTs in form and function), but would more likely indicate the force tailoring that would be optimal, and the types of actions to be used within task organization decisions (e.g., an HBCT providing platoons of M1s and M2s in direct fire support role of IBCTs and SBCTs). This is where Army Maneuver Force Doctrine (as a capstone document) and Force Tailoring and Task Organizing Doctrine (as subsets of Maneuver Force Doctrine and continuously adapted to the national security environment) need to be written and implemented.

A common center bringing together the branches and forces is a great step toward achieving tailorable units, as well as tailored leadership. Modularity has, by design, brought together the inherent strengths and the capabilities found in mechanized infantry, armor, and combat engineers in the Combined Arms Battalion (CAB) of the HBCT. This is the combination of movement and maneuver, mobility, and direct fires that is included in the description of the new Movement and Maneuver warfighting function. Within the brigade combat team is the ability to add indirect fire support (of larger caliber, mortars still reside in the CABs) and limited air defense – the remaining elements that constitute the Joint concept of the new Force Application function, as well as the other combat support and service support capabilities required to make the BCT capable of self-sustained close combat within set parameters.

Toward Greater Understanding of Force Application

The multiple layers of joint military doctrine and emerging concepts documents as found within the Joint Operations Concepts (JOpsC) Family of Joint Concepts were introduced earlier.

A Joint Functional Concept (JFC) describes how the future force will perform a military function across the mission sets, or range of military operations (ROMO). The JFCs link Capstone Concept framework solutions and future force characteristics to a specific military problem, such as how to conduct Major Combat Operations (MCO). The JFCs also identify functional capabilities to generate the required effects for successful mission completion, as identified within the Joint Operating Concept (JOC) covering the military problem (e.g. MCO).[79] Finally, the joint military force achieves the goal of full spectrum dominance by integrating the capabilities described in the JFCs.[80]

Of primary concern for this paper at this point is the Joint Force Capability concept of Force Application (FA). The current Force Application Future Concept document scope is stated as "…the capabilities required to effectively apply force against large-scale enemy forces in the 2015 timeframe, described in the context of Major Combat Operations (MCO)."[81] The capabilities of the Force Application function include the ability to maneuver and the ability to engage. Evolution of technology that allows successful direct and indirect fires against any type of target enables the merger of distinct Army branches (primarily Infantry, Armor, Field Artillery, and tactical Air Defense) and warfighting functions (Movement and maneuver, Fires) during tactical and operational employment.[82] Stated another way, Force Application encompasses all aspects of direct action against a rival – it is the function that forces a change in behavior of an adversary system or sub-system and achieves the stated purpose of the operation. This embraces the USMC concept of maneuver including the physical, temporal, and psychological aspects of

[79] Department of Defense. *Joint Operations Concepts Developments Process (CJCSI 3010.02B)*, Office of the Joint Chiefs of Staff, 27 January 2006.

[80] Department of Defense. *Force Application Functional Concept*, 22.

[81] Department of Defense. *Joint Operations Concepts Developments Process (CJCSI 3010.02B)*.

[82] Robert Valdivia, "Maneuver Branch: A Vision for the Future" (Carlisle Barracks, Pennsylvania: U.S. Army War College Strategic Research Project, 18 March 2005), 5-7.

competition, conflict and warfare.[83] Conceptually, this also includes the environmental domains of air, sea, land, and space. Force Application as a function will take on many different forms (formations, units, organizations applied to gain capabilities) to operate within each of the different domains; it will, however, remain the function of execution, just as operations is the function in business that produces the ultimate good or service offered by the firm to the consumer. Force Application will be the heart of joint military and interagency forces (Unified Action); the units comprising the nucleus of this function will be the building block on which other capabilities and functions are applied (force tailoring) to accomplish the mission for each environment (factors of self, enemy, and terrain).

As the joint military force is applied across environmental domains, it will also be applied in the physical, cognitive, and information domains. The CCJO establishes a conceptual battlespace that is created by the fundamental joint actions of acquiring knowledge, establishing reach, and creating effects. The joint force commander will design a campaign to be dominant in both the physical as well as the conceptual (cognitive and information) battlespace.[84] The focus here is on the application of force in the physical and land domains where current Army maneuver-centric BCTs are required to be dominant to achieve decisive effects. The evolution from current platform-driven BCTs operating within Army Full Spectrum Operations doctrine will include a step toward optimizing force packages built around these BCTs (e.g. HBCTs conducting MCO, IBCTs conducting SO) then finally the leap to truly joint, then interagency forces built around BCT Units of Action designed to dominate the physical and land domains within a purpose-driven force (mission sets of MCO, SO, HS, NCRO, FEO, GS). This framework was introduced earlier.

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[83] U.S. Marine Corps. *Marine Corps Doctrinal Publication 1, Warfighting* (Headquarters, U.S. Marine Corps, 20 June 1997), 72.

[84] Department of Defense, *Capstone Concept for Joint Operations*, D-3.

The capabilities required for the Force Application function as identified in the MCO Joint Operating Concept are summarized as:

- Develop processes, procedures, and automated support systems to fully integrate fires and maneuver …to increase lethality (4.C.1.)
- Provide offensive capability to counter enemy anti-access systems (4.C.2.)
- Rapidly project force directly to the objective from strategic and operational distances (4.C.3.)
- Rapidly deploy, employ, and sustain adaptive, modular, mission capability forces and packages to and throughout the battlespace…(4.C.4)
- Fully integrate joint, interagency, and coalition (combined) capabilities…to be able to employ all useful means and avenues of influence…throughout the battlespace (4.C.5)
- Conduct large-scale, simultaneous and distributed, multidimensional combat operations (including unconventional and forcible-entry operations)…engage with great discrimination…move with great speed…(4.C.8.)
- Integrate Deployment, Employment, and Sustainment (DES) of the force in order to eliminate unnecessary redundancies, reduce friction, stimulate synergy, and enhance the effectiveness, efficiency, and economy of operations (4.C.9.)
- Provide multidimensional precision engagement, including close fire support…deep reach precise fire support…lethal and non-lethal (nuclear and conventional) fires…(4.C.10.)[85]

The capabilities required for the Force Application function as identified in the SO Joint Operating Concept are summarized as:

- The ability to impose security throughout the battlespace to ensure unhindered combat operations and set the stage for long-term success. (4.C.1.)
- The ability to disintegrate, disorient, dislocate, or destroy direct threats to stability with a combination of kinetic and non-kinetic weapons as well as military and non-military means…(4.C.1.b.)
- The ability to rapidly organize, train, and equip forces to conduct integrated, multi-agency stability operations…(4.C.2.)
- The security element must be able to specifically conduct offensive and defensive stability operations…that imposes and maintains full security in objective areas. (4.C.2.b.)
- The ability to integrate deployment, employment, and sustainment (DES) of the force…(4.C.3.)[86]

[85] Department of Defense. *Major Combat Operations Joint Operating Concept*, (Office of the Joint Chiefs of Staff, September 2004), 56-57.

[86] Department of Defense. *Stability Operations Joint Operating Concept*, (Office of the Joint Chiefs of Staff, September 2004), 50-51.

The capabilities required for the Force Application function as identified in the FEO Joint Integrating Concept are summarized as:

- Fully integrate joint fires and maneuver through kinetic, non-kinetic, lethal and non-lethal weapons to achieve desired effects…(4.A.3.a)
- Execute immediate response with modular, tailorable force packages pre-positioned in strategic locations (4.A.3.e)
- Conduct joint forcible entry via vertical envelopment and surface amphibious assault across the global battlespace from strategic, operational and tactical distances (4.A.3.f)
- Provide near-continuous force application ranging from localized small-scale effects, to persistent effects that can dominate defined geographic regions in order to deny the enemy freedom of action (4.A.3.g)
- Defeat or bypass enemy access denial strategies…(4.A.3.h)
- Immediately deliver forces in multiple unpredictable locations with sufficient combat power to achieve decisive effects (4.A.3.i)
- Rapidly deploy and employ mounted forces that are lethal, mobile and survivable (4.A.3.j)
- Produce desired effects using precise fires and maneuver…(4.A.3.k)[87]

Potential Capabilities Gaps

The United States Army's maneuver forces, as employed during the GWOT have proven to be extremely proficient in most of the actions required within the MCO mission set, as well as most of the security roles required within the SO mission set. Response measures, as well as the role within recovery during Defense Support of Civil Authorities (DSCA) missions, however, have not been as successful for many different reasons, most of which are not due to lack of military capabilities. The NCRO mission set, to include foreign and domestic, is very similar to the restoration of essential services element of SO. It is within this portion of the range of military operations that the Army has had less than optimal performance and transformation efforts have not, to date, focused on remedies to the problem. The Army is combat-oriented, as it should be. An optimal solution would be to shift the role of NCRO (foreign and domestic, the latter being the old civil support within Full Spectrum Operations doctrine) to the Reserve

[87] Department of Defense. *Joint Forcible Entry Operations Joint Integrating Concept (Version .92A3),* (Office of the Joint Chiefs of Staff, 15 September 2004), 42.

Component, which as an organization has greater capabilities due to experience, education, and skill set, than does the Active Component.

The QDR recognizes Stability, Security, Transition, and Reconstruction (SSTR) as a U.S. government wide mission of increasing importance and identifies military support to SSTR as a core mission.[88] The Army must continue toward full brigade-centric operations while designing greater ability to infuse the formations with joint and interagency capabilities. This can be done in a plug-and-play fashion within the BCT organization, or by applying additional assets to a separate organization that is under tactical control for movement and security by the maneuver brigade combat team(s). "Likewise, should combat operations be necessary, the joint force must be able to fight and win while simultaneously facilitating transition to a state of peace and stability in which national interests can be sustained."[89]

Optimally, the IBCT can be used as the primary maneuver element achieving security objectives (and specified defeat effects such as local disruption, destruction of target nodes, etc.) while setting the framework for reconstruction activities (when simultaneous SO and NCRO are required). The inherent strengths of command and control, training proficiency, security, motivation/morale and professionalism are keys to the organization of non-military national assets and capabilities that inherently do not operate within the same paradigm of centralized control and unity of command. This would help to close the gap between current Full Spectrum Operations doctrine, where Army units are still the primary ways and means toward an interagency-centric ends (stability and restoration of essential services), and a fully realized Unified Action force (total integration and synchronization of joint and interagency ends, ways, and means). Current Army transformation and the joint operating environment identify the need for a capable stability force but do not provide specifics on tactical employment. The Army

[88] Department of Defense. *Quadrennial Defense Review Report*, (Department of Defense, 6 February 2006), A-4.

[89] Department of Defense, *Capstone Concept for Joint Operations*, 2.

National Guard should itself be transformed to become the nucleus of the reconstruction force – restoration of essential services is common whether at home or abroad. Unified command and control within a responsive organizational structure is the key to success in most missions; Army National Guard brigades should become the 'implementation' structure within the interagency force that would execute most NCRO (response and recovery, reconstruction) missions.[90] They would provide all of the support, operating, and intelligence activities (through each of the warfighting functions) required by the interagency force, plus provide local security, while the Army maneuver BCTs (primarily IBCTs during this phase of the operation) achieve operational level shaping and decisive effects. An added benefit to the nation is that the same force building capabilities and proficiencies on foreign NCRO missions would also be the identified and ready force within the Department of Defense's requirements to provide Defense Support of Civil Authorities (or, NCRO-Domestic).

Another perceived gap is in the development of a medium force. The Stryker vehicle was not designed to be a medium capability platform – it does not have a main gun above a .50 caliber machine gun or 40mm grenade launcher and it must be reinforced in theater to provide adequate protection (survivability). The Stryker was and is an interim vehicle. The Stryker BCT, due to the amount of C4I equipment and architecture, as well as the abundant indirect fire systems and number of maneuver battalions, does become a fairly capable operating force within an environment short of high-intensity combat. However, this does not equate to a medium force that better balances the needs of survivability, lethality, and mobility (tactical employment and operational deployment) in a way that can provide for the joint force a dislocation (defeat mechanism) or deterrence threat as is currently needed in some theaters and within some corners of the national security environment.

[90] Response and Recovery are primary phases in the Department of Homeland Security's National Response Plan.

Tactically Dominant describes the degree to which the joint force is able to overmatch the enemy and dominate all encounters in the battlespace. Successful operations are the cash payout of force application. Although many engagements may occur at extended ranges, tactically dominant forces must also be able to prevail in close fights as well as in all terrain and conditions. Tactical dominance is enabled through various combinations of superior battlespace mobility, range, precision, volume of fire, protection, information operations and knowledge.[91] Agile describes the degree to which the joint force is able to apply force (1) rapidly across strategic distances and (2) operationally and tactically through all domains of the battlespace at will…freedom of action can be achieved through design of platforms (e.g. using speed, stealth and protection) or created by the actions of the joint force (e.g. avoiding, neutralizing or destroying enemy defenses).[92]

Currently there is a dilemma imposed by physics and the lack of strategic lift to move our heavy forces at will; the need for tactical and operational persistence is hindered by the need for strategic agility. Persistence has many attributes, one of which is the ability to apply force discriminately, continuously and indefinitely.[93] Instinctively this requires the ability to move through any terrain and condition (tactical mobility), survive against any threat (survivability), and defeat all encountered threats (lethality) – this describes the tank and the current heavy force. The ability to persist provides the ability to adapt methods and effects to achieve fluid strategic guidance; a force with less staying power can be employed only for limited and defined purposes before its capabilities start to dwindle.

If we want to use dislocation (gain a position of advantage which renders the enemy strength irrelevant) as a defeat mechanism, then we need a force that is persistent enough, as well as agile and tactically dominant (because the threat has to be real enough to the enemy to warrant

[91] Department of Defense. *Force Application Functional Concept*, 15.
[92] Ibid., 15.
[93] Ibid., 15.

consideration of capitulation or surrender). Heavy forces are best suited toward disintegration, while light forces are best suited for destruction (or attrition) as defeat mechanisms. Dislocation also equates to the concept of 'Operational Maneuver from Strategic Distances'.[94] Finally, as part of the FEO and SD mission sets, as well as use as a preemption defeat mechanism, there must be a medium force that is fully air-employable (some call this Air-Mech-Strike).[95] A final cautionary note – during its study on Army attempts to reorganize itself since 1939, the Combat Studies Institute concluded that "reorganizations that are intended to address austerity, be it shrinking manpower pools or lack of strategic transport, run the grave risk of creating a structure that is deployable but not fightable…since 1943 the problems of inadequate combat power and sustainability have plagued every effort…"[96]

[94] U.S. Army. *U.S. TRADOC Pamphlet 525-3-0*.

[95] David L. Grange, Huba was de Czege, Rich Liebert, Chuck Jarnot, Al Huber, and Mike Sparks, *Air-Mech-Strike: Asymmetric Maneuver Warfare for the 21st Century*. (Paducah, Kentucky: Turner Publishing Company, 2002), 18-19. "Air-Mech-Strike (AMS) is a modern variation of the broader concept of 'airmechanizaton' first pioneered by Soviet Marshal Tukhachevskii in the 1930s…AMS provides full, three-dimensional maneuver capability and forced-entry options…essential characteristic of the AMS force is its tracked armored fighting vehicles."

[96] U.S. Army. *CSI Report No.14, Sixty Years of Reorganizing for Combat: A Historical Trend Analysis*, 61.

IV. RECOMMENDATIONS FOR MANEUVER TRANSFORMATION

Summary of Steps Necessary Toward Maneuver Transformation

> In short, armies must constantly review their doctrine and organization …commanders must train and coordinate the resulting military units in order to implement that doctrine…finally each individual in the organization must function smoothly and rapidly, despite the unpredictable and deadly nature of the battle. – "Combined Arms Warfare in the Twentieth Century" [97]

Recommend the following steps toward achieving Army Maneuver transformation:

- Continue the merger of the institutional Armor and Infantry branches into the Maneuver Center at Fort Benning, Georgia
- Constitute two major subordinate commands under the Army Maneuver Center – Maneuver Branch (institutional, or generating) and Maneuver Forces (operating)
- Constitute the Army Maneuver Branch with two subordinate schools – Mounted Maneuver Forces and Infantry[98]
- Constitute the Army Maneuver Forces with four subordinate directorates – Heavy, Motorized, Infantry, and Experimental, with the flexibility to modify, add, and delete as needed by the Army operating forces
- Include Reconnaissance within each of the two schools and organic to all of the types of forces; adjust DOTMLPF appropriately to reflect that Reconnaissance is a type of operation conducted for both internal and external purposes, is required at every level performing tactical actions as well as in support of the operational commander, and is by nature different within the environmental factors of self, enemy, and terrain such that a "one size fits all" approach will not suffice

[97] Jonathon M. House, 11.
[98] As advocated by COL Reese and Mr. Henley in *Armor* (September-October 2005).

- Begin development of an Air-Employable BCT (Heavy) force, as well as mechanized medium forces (e.g. M113s and Armored Gun Systems, or Commercial Off The Shelf systems currently available), with appropriate DOTMLPF resourcing to fill possible capabilities gaps – specifically this could satisfy many of the FEO force application requirements
- Formalize the relationship and responsibilities between the Army Maneuver Branches (Mounted Maneuver and Infantry – as part of the Army generating force) and Army Maneuver Forces (as a force integrator to Army operating forces) as per Army Force Generation implementation goals and guidelines
- Create Army Maneuver Doctrine in support of Army capstone concepts and doctrine, and assist in shaping Joint capstone concepts and Joint Operating/Integrating Concepts, specifically for Major Combat Operations (MCO), Stability Operations (SO), and Forcible Entry Operations (FEO); formalize the concept of operating in the physical, temporal, and psychological realms as an inherent part of and a goal of Army maneuver
- Modify Army Operations Doctrine (FM 3-0) to include generating systems of maneuver (force tailoring) to achieve the relevant operational and tactical defeat mechanisms/effects and, employment of the task organized maneuver systems within the primary environments of MCO, SO, and FEO utilizing the various types of Maneuver BCTs as the core elements; also include combinations of maneuver and engagement within both force tailoring and task organizing for tactical actions; begin the education and training of these concepts with junior officers (captains – maneuver systems and warfare) and as inseparable from the concepts of combined arms warfare (to be taught to lieutenants)

- Continue to update the subordinate doctrinal references for each of the types of BCTs to include a holistic warfare approach (e.g. not just the 'combat arms' portion, but the combat support and service support elements as well) and applications of each of the types of Army Maneuver Forces (e.g. conducting systems defeat warfare employing the HBCT, conducting nodal attack employing the IBCT, conducting physical land controlling operations employing SBCTs)
- Establish a vision and appropriate roadmap to accomplish the transformation from individual branches to combined arms, from combined arms to functional maneuver, and finally from maneuver to land domain force application
- Differentiate between general purpose and multi-purpose, as well as special purpose for optimal mission employment

The Central Idea – Force 2010 and Army Maneuver Development

Evolution of the Force

The purpose of the future Army BCT-centric maneuver force will be to form the nucleus of the FA function of the future joint military (and interagency) force, mission-oriented on the operational concepts of MCO, SO, and FEO – see Figure 2 for this illustration. The Army Maneuver Center should use the Force Application capabilities requirements identified in the MCO, SO, and FEO capstone concept documents (JOC, JIC) to develop the Branches and Forces across the DOTMLPF domains specific for each mission set (special purpose force) and/or supporting one or more (multi-purpose force) mission set. Use of the Deployment, Employment, and Sustainment (DES) cycles[99] and ARFORGEN models as implementation tools would complete the Army Maneuver Force Tailoring. Additionally, with an understanding of the respective mission sets and anticipated environments, defeat mechanisms, systems of maneuver,

[99] Department of Defense. *Major Combat Operations Joint Operating Concept.*

and the tactical maneuver system, Army Maneuver Task Organization can be achieved to directly support the operating forces. These concepts form the basis of the Army Maneuver Center's generating and operating force requirements (the processes of Force Tailoring and Task Organizing being the outputs).

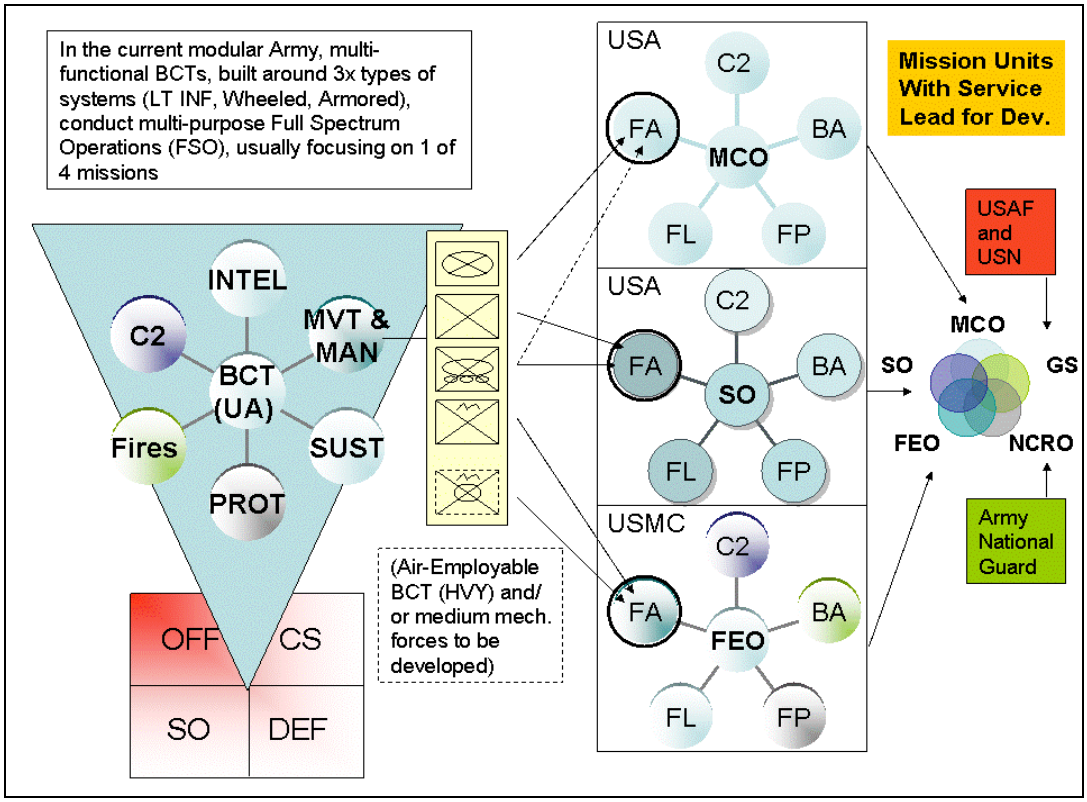

Figure 2: Evolution of Multi-Purpose Army BCTs to Special Purpose Joint Force Application Core Elements (O'Brien)

"How effectively the joint force creates the desired effects will be a direct reflection of how well it is able to integrate maneuver and engagement."[100] Functional design allows for specialization and facilitates the sharing of knowledge – a primary concern in adaptive systemic warfare within the Information Age. The operational level organization, both operating force and generating force, must continuously learn about the environment (factors of self, enemy, and terrain) to enable proper integration of maneuver and engagement (all forms of lethal and non-

[100] Department of Defense. *Force Application Functional Concept*, 12.

lethal effects). [101] However, the propensity to conduct maneuver or engagement is different based upon the type of BCT which is at the core of the tactical combat group.

The best method to capture this specialization and skill required to integrate both maneuver and engagement and balance (between maneuver forces and engagement forces) the required structure within the Army and joint force is to incorporate both within a single branch that has control over the DOTMLPF domains that go into force development and integration.[102] A single Army functional branch (or a functional area, but not as broad as 'Operations') can develop the institutional knowledge, culture, and attributes, as well as control the force design to maximize responsiveness to national security and defense needs. It can develop the leaders needed to master the complex battlespace found within our complex national security environment. "Division and corps commanders practice military art in the continuous tailoring and task-organizing of forces and timing of operations…a phase change may occur abruptly, with a significant change in task organization, mission, or rules of engagement… this requires commanders to continuously adapt the organization, basing, and distribution of forces to conditions in the area of operations (AO)."[103] The time to begin the education and development of maneuver expertise should be from the very beginning – we cannot afford to remain in a branch stovepipe into our most formative years, and we must have the synergies that can be created by bringing together the various forces into a common Army Maneuver Center.

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[101] Department of Defense. *Force Application Functional Concept*, 24.

[102] U.S. Army, *How the Army Runs, A Senior Leader Reference Handbook*, 10. The manual describes most of these processes within the construct of force management – the underlying basis of all other organizational life cycle functions; included in force management are conceptual development, capabilities requirements generation, force development, organizational development, force integration functions and resourcing. Specifically, force development determines Army DOTMLPF capabilities requirements and translates them into programs and structure.

[103] U.S. Army. *Field Manual Interim 5-0.1*, B-6.

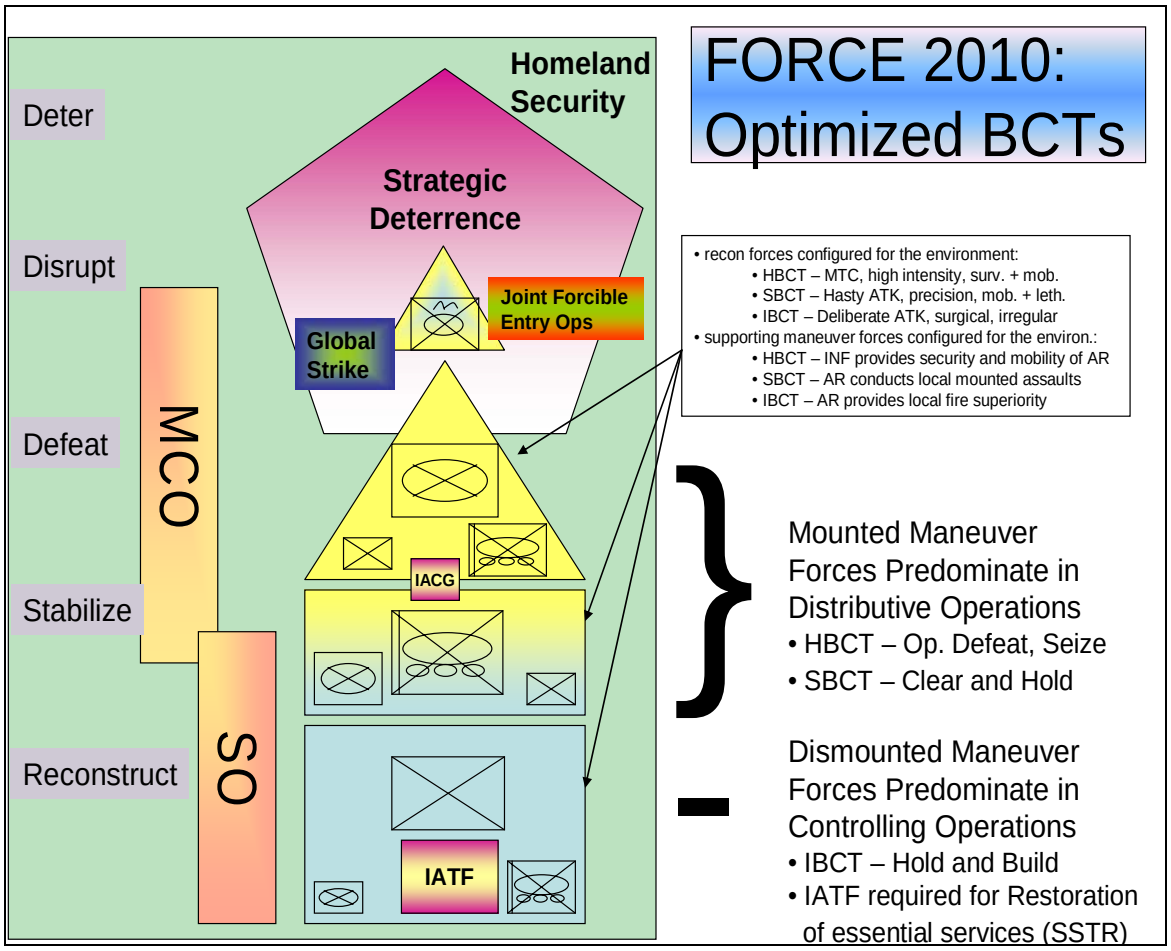

Figure 3: An Operating Concept Utilizing Force Tailoring and Task Organizing to Achieve Desired Defeat Effects (O'Brien)

Force Tailoring and Task Organizing

Developing Systems of Maneuver

HBCTs conduct maneuver as the means to achieve the purpose, whereas SBCTs and IBCTs conduct engagement to create the desired effects. Both of these are means to conduct close combat, the core competency of the current Infantry and Armor branches and their designed types of BCTs, and the way in which the enemy is defeated. It is incumbent upon the joint force, or the operational command and control (C2) structure of the Unified Action force, to know how to balance and integrate maneuver and engagement properly to achieve the optimal effects – this is Force Tailoring. Creating and employing combinations of units that conduct the battlefield activities of move, strike, and protect is achieved through Task Organizing.

Mounted maneuver forces can and do engage threat targets precisely and effectively (locally), but that is only one component of what they do – shock effect is the combined effects of destruction in the realms of the physical, cognitive, and information domains. They do this on a general scale to achieve systemic defeat. The HBCTs are mounted by design, dismounted by necessity only. The dismounted maneuver forces conduct limited movement, engage and destroy in detail, and seize, clear and hold land. They are precision engagement systems and they defeat specific systems or sub-systems (e.g. nodes, or targets) of the enemy. The IBCTs and SBCTs are dismounted by design, mounted by necessity (though the SBCT is closer to a combination force than the other two – the Stryker vehicle can be employed in limited security and support roles during some missions, whereas the medium cargo truck being used for movement in an IBCT will not be used as a security platform). Understanding the nature of these two types of forces is critical to the design, or tailoring, of the force package. This is depicted in Figure 3 above.

A force optimized to the task enhances efficiency, saves lift, puts fewer people in harms way, and enhances agility. Tailorable units are also scalable, down to the lowest level organization without loss of functionality, as well as up to accept other elements of the joint force. Tailorable systems are highly interoperable; they can be attached to other organizations are able to use common C2, sustainment and support.[104] There are two challenges being addressed here – (1) how best to balance maneuver and engagement within a force application framework to get the right kind of tactical effects – task organizing, and (2) how best to optimize for the complex battlespace, especially given the difficulties of the transition from offensive (major combat operations) to stability operations – force tailoring. Both of these challenges may occur at the same time and within the same force, if we do not design for these sets of problems prior to deployment and employment. The desired effects, or purpose, of the formations will help to determine which type of force is best optimized to deploy and subsequently employ – HBCT for

[104] Department of Defense. *Force Application Functional Concept*, 14-15.

MCO, IBCT for SO, and SBCT as a multi-purpose force supporting both mission sets and the primary formations. This is a larger muscle move. The more acute moves are the balancing of effects derived from the actions inherent to maneuver and engagement. Again, a force optimized for the environment will have less of a challenge than either a "one size fits all" type of force, or one completely unsuited for the mission (e.g. an HBCT conducting NCRO or SO as the main effort). A single Army Maneuver Center with Maneuver Branch and Maneuver Forces components responsive and responsible in support of the ARFORGEN model would be best to lead the design of operational forces and formations tailored to a specific mission environment. This common center of excellence would be the lead on DOTMLPF resourcing for Unit Life Cycle (ULC) phased preparations, training, and readiness actions to ensure 'relevant and ready land forces' are available.

Developing Capabilities – A Common Application of DOTMLPF

> It is not so much the mode of formation as the proper combined use of the different arms which will insure victory. – Antoine Henri, Baron de Jomini[105]

A method to measure the DOTMLPF developmental requirements is to assess against the attributes of the Force Application function as described in the Functional Concept document. The desired attributes include: lethal, non-lethal, synchronized, discriminating, predictive, streamlined command and control, networked, tailorable, agile, tactically dominant, persistent, and survivable.[106] The Army Maneuver Center would lead centralized processes to assess the security environment for requirements, identify capabilities and shortfalls, and apply resources across the DOTMLPF domains to ensure relevancy of all Army Maneuver Branch functions and Maneuver Forces actions (plan, prep, execute within mission cycles). The mission sets of MCO, SO and FEO would be the operational context in which the attributes are measured, developed,

[105] U.S. Army. *Field Manual 3-90,* A-1.
[106] Department of Defense. *Force Application Functional Concept*, 13-15.

and applied – this would be the force development equivalent of Force Tailoring. The primary tactical actions of move, strike, and protect could serve as simple but consistent and reliable measurements within the critical force development equivalence of Task Organizing.

When the predominant type of operation changes from offense to stability and reconstruction, the types of units initially deployed may not be ideally suited for the associated tasks…an increased emphasis on governance, economic development, or social action may characterize this transition (see Figure 3). Commanders must be prepared to tailor forces optimized for stability and reconstruction-related tasks to assume the changing requirements of the mission.[107] With force development and integration residing within a single center, the ability to respond to the operating environments and changing requirements would be greatly enhanced. The ability to generate new designs, or new applications of old designs, or even revolutionary designs and applications for new environments – all can be developed through the Center, supported by the schools and branches, and implemented by the forces, with reliable and consistent feedback to all parts of the generating and operating processes shared by a common community. Figure 4 illustrates how the Maneuver Center acting as a force integrator between generating and operating force activities can help to optimize Army maneuver force structure.

[107] U.S. Army. *Field Manual Interim 5-0.1,* B-6.

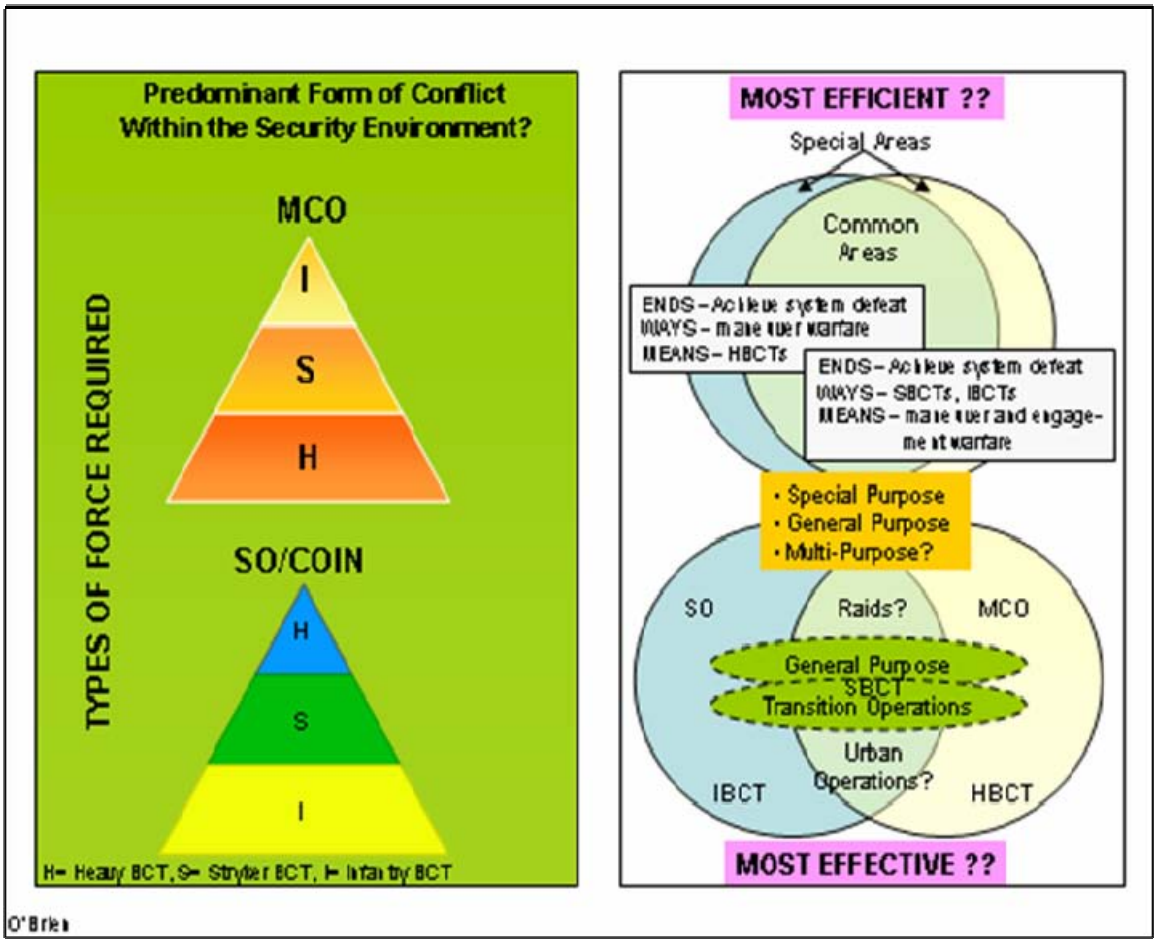

Figure 4: The Maneuver Center - Optimizing Generating Force Responsiveness to Operating Force Requirements (O'Brien)

ARFORGEN and Continuous Improvement of the BCTs

> A very real danger is asking any system to do too many things, resulting in a system that does nothing especially well. – Ralph Peters [108]

The Army Force Generation (ARFORGEN) Model is a structured progression of increased unit readiness over time, resulting in recurring periods of availability of trained, ready, and cohesive units prepared for operational deployment in support of regional combatant commander requirements. ARFORGEN is a tool that is implemented in all three levels of warfare – it is responsive to the implicit and explicit needs of the national defense strategy by

[108] Ralph Peters, *Fighting for the Future – Will America Triumph?* (Mechanicsburg, Pennsylvania: Stackpole Books, 1999), 89.

guaranteeing certain numbers, by type, of BCTs available for worldwide mission support, it aligns trained and ready units with the operational commander's (the regional combatant commanders) needs in their respective theaters, and it synchronizes and integrates the mission preparation for individual BCTs down to individual soldier training. In addition to this, ARFORGEN is seen as the vehicle with which the Army will be able to use to balance the operating force's needs while transforming the overall force itself. Thus, it synchronizes Army strategic initiatives for transformation with unit transformation encountered while going through a directed life cycle. A Unit Life Cycle is three years for Active Component and six years for Reserve Component units. During the life cycle the unit will reset and train, be made ready for specified mission sets, and then be made available for deployment and employment within the specified theater of operations in which it was trained, or, in the case of emergency, worldwide deployment and employment.

The ARFORGEN Model also formalizes the relationship between the institutional, or force generating, side of the Army, and the operating force – those units, individuals, and equipment being employed worldwide. The Model synchronizes planning, resourcing, and execution for continuous operations through a series of conferences attended and planned for by the institutional and operating force staffs. The outputs to the conferences include approved sourcing requirements and appropriate training, equipment, manning, and readiness resourcing. The key difference between the old paradigm of "tiered readiness" and ARFORGEN is that all units identified by the conferences as aligned with missions during phase three of their unit life cycles will be fully resourced for their missions, as opposed to some units being better resourced (equipment, training, manning) than others as happened in the past.

ARFORGEN offers an opportunity to formally link the future Army Maneuver Branch (the Institutional Army, or generating force) with how future Army Maneuver Forces (Operating/Operational Army) are designed, trained, and fully prepared through DOTMLPF resourcing to field the appropriate forces to the combatant commanders. Just as the Army

Campaign Plan uses ARFORGEN implementation to "…adapt the Institutional Army to effectively generate and sustain the Operational Army in support of ARFORGEN…to provide relevant and ready land power to the Joint Force" the Maneuver Branch should do the same for the Maneuver Forces. [109] There should be a more direct relationship between what and how the institutional force trains and prepares its soldiers and leaders, and what is required from the field by the operating force. This common Maneuver Branch will be more responsive to those needs, and be more holistic in its approach, with all aspects of maneuver/force application (mounted/dismounted, fire and movement, mobility/counter-mobility, engagement) encompassed within one single Maneuver Center housing the various schools (the Branch component) as well as the Operating Forces Support. This organization will also enable Fort Benning to become a Power Generation Platform (PGP) for all operating Maneuver Forces worldwide – as captured in the proposed Maneuver Center Mission Statement.

Currently there are proposals to utilize a 'TRADOC Capabilities Manager' (TCM) for each of the types of BCTs (Heavy, Stryker, Infantry). The TCM's role is to integrate and synchronize the DOTMLPF domains in response to national security environment and the operating force (through the combatant commanders) requirements to ensure the relevancy and readiness of the Army's Maneuver Forces. These TCMs are organized within the Army Maneuver Center and will be a mechanism to ensure the generating force and operating forces are in harmony. An additional TCM is needed for medium force development as well. See Appendix 2 for description of how a TCM would utilize an Integrated Concept Team (ICT) to implement continuous change and improvement techniques to fully prepare BCTs going through the Unit Life Cycle process.

[109] ARFORGEN brief, slide 36

V. CONCLUSION

Prologue – Purpose Drives Design

> The key to the future of armored warfare lies in disregarding what we expect a tank to be in order to focus on what we need the tank of the future to do. – Ralph Peters[110]

Alfred D. Chandler concluded that major companies generally follow a pattern of strategic development and then structural change, rather than the reverse.[111] Current Army transformation has at its core the restructuring of the operating force into modularized brigades that can be employed by any number of types of headquarters and within any type of force tailoring package. Strategic developments within joint operating concepts that drive our collective vision of warfare, at least the types of mission sets that our forces will be asked to do, should lead the structural changes to organizations so that form can follow and support function (purpose). Then, design of the operating forces using all of the DOTMLPF resource processes should follow. The Combat Studies Institute's research on the United States Army's attempts to reorganize indicate that the most successful reorganization is the one that is designed to meet a specific opponent on the battlefield and that technology-driven reorganizations are inherently more risky in nature in regard to the strategic and operational context.[112]

Doctrine does not have to be perfect nor attempt to counter every possible threat (including adversarial combinations of combined arms, maneuver, and force development); General McNair's order to standardize M4 Sherman tank design and production was based on his desire to support a flawed doctrine of tanks being used primarily for exploitation and pursuit, not

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[110] Ralph Peters, 87.

[111] Kathryn M. Bartol and David C. Martin. *Management (2nd Edition),* (New York, New York: McGraw-Hill, Inc., 1994), 311.

[112] U.S. Army. CSI Report No.14, Sixty Years of Reorganizing for Combat: A Historical Trend Analysis, .61.

in close combat (assault).[113] During World War II we were largely unable to adapt existing weapon systems and tactical systems (of maneuver) to allow for tactical innovation, such as the need to use tanks in the assault. If we continue to pursue standardized, general purpose equipment and organizations, then we must have the ability to adapt our forces for the environment in which they will be employed. This can be done by a centralized Maneuver Center that has the ability to be responsive to force tailoring and task organizing requirements of the operating force. But, the expectation of the forces generated needs to be limited – special purpose is optimal over multi- and general purpose, if less efficient, and can be achieved through deliberate force development and generation processes.

Summary

The evolution of the Armor and Infantry branches into a single functional branch is occurring due to several factors – business efficiencies, tactical integration of movement, maneuver, fires and engagement on the GWOT battlefields, formalization of the Army warfighting functions into the operations process, concept development and the need for Army integration with the Joint Force Application function, and the need for adaptive and tailorable formations in the present and future security environment. The 2005 BRAC legislation mandated the creation of an Army Maneuver Center at Fort Benning, Georgia, bringing together the Armor and Infantry into a common institutional center. Two interdependent schools will continue to develop and evolve within this center of excellence, so that the requirements for Army maneuver capabilities, balancing maneuver and engagement, can be satisfied to form the nucleus of land domain Force Application formations. This branch will be responsive to the needs of the Joint force in Unified Action by adjusting the institutional inputs to force development of Army Maneuver Forces (within strategic guidance for the right mix of maneuver and direct engagement

[113] Jonathon M. House, 152.

BCTs dependent upon the needs of the national security environment). Centralized control of the DOTMLPF domains using the ARFORGEN model of unit life cycle management and mission orientation, as well as applying TRADOC Capabilities Managers' Unit of Action Integrated Concept Teams for mission preparation will allow the Army Maneuver Branch to anticipate and meet these requirements and develop a more agile and tactically dominant force. A greater understanding of the maneuver system (task organized for mission orientation), as well as systems of maneuver (forms of maneuver warfare through force tailoring to achieve specific operational defeat effects) will be achieved within the Army and the joint force. Ultimately this will allow for maximum effectiveness within higher degrees of efficiency – a goal for the BRAC legislation as well as a necessity for the mounted and dismounted warriors fighting on the near future battlefields in adaptive systemic warfare. This is the future of a common Army Maneuver Branch fielding adaptive and mission-oriented Maneuver Forces.

APPENDIX 1 – USING HISTORY TO INFORM OUR DESIGNS

In 1934 Germany took the first steps toward regaining national power lost by her recent defeat in World War I and acceptance of the humiliating Versailles Treaty. In that year Germany created three armored divisions and reoccupied the Rhineland.[114] These events signaled that a new decisive combat arm, or force, was being born. To optimize this organizational design, an aggressive doctrine that would support it with integrated functions and clarity of purpose was needed. Through operational and training trial and error what we now know as "blitzkrieg" was developed. Later it was shown that this "lightning war" had more to do with shock effect from those few armored units than from the hundreds of total divisions fielded. The German army placed great value in shock effect whereas the Allied armies did not. The result of this situation was that Germany almost defeated the Allies in World War II prior to the introduction of America and her vast resources.

History is a source of learning about the development of "tank" systems from ancient to modern times, as is the body of recorded experiences of actual tank combat during World War I. Thus, the German and Allied armies had history as well as contemporary experience to guide the development of their tank systems. Through the study of these two primary sources of insight and application of current resources, the armies should have then fielded and employed tanks to achieve the effects needed for the impending conflict that would soon come to fruition in World War II. The German army did all three – they understood historical examples of tank warfare centered on shock effect, they learned from contemporary experiences in World War I, and they created an armor force and a doctrine to capitalize on shock effect.[115] The Allies did very little to

[114] James Cary, *Tanks and Armor In Modern Warfare* (New York, New York: Franklin Watts, Inc., 1966), 91.

[115] H.C.B. Rogers, *Tanks in Battle* (London, United Kingdom: Seeley Service & Co., LTD, 1965), 91-93.

acknowledge the qualities of shock effect after their World War I experiences and did nothing to organize and employ units that would utilize shock effect to gain a decisive advantage.[116] This cost the Allies considerably through the opening stages of World War II.

The combination of combat capabilities and effects defines a "tank system", and all cultures have applied the technology and materials available to achieve this combination. Chariots, war horses, elephants, and Stonewall Jackson's Foot Cavalry were all attempts to design multi-capable systems that would achieve shock effect. [117] The history of the tank goes back thousands of years, but the introduction of the armored motorized tank in World War I was a pivotal event in warfare that finally unleashed the full potential of shock effect. [118]

Historical Attempts to Design for Shock Effect

The combat arms of warfare have traditionally included the infantry, for close battle and destruction of the enemy, the cavalry, for developing situational awareness and for exploiting success after the close battle, and artillery, for supporting the infantry assault with indirect fires to disrupt enemy formations and destroy his morale. Most armies historically maintained these as separate arms. Some armies have attempted to create a force that blends the capabilities of the other three into one – an example would be Hannibal and his use of elephants to assault the enemy lines. This fearsome "tank" system would literally crush the opponent and break his will, as well as his lines. This system described has been around since man first thought of overcoming the limitations of foot infantry, which offered no synergistic combination in itself, but only when organized into a system consisting of many individual infantrymen, e.g. the phalanx or legions. These still had to be complemented with cavalry and artillery as previously discussed. In World War I, to break the stalemate of trench warfare, two systems were developed

[116] Ibid., 83.
[117] Ibid., 20-21.
[118] Ibid., 36.

(plus a German doctrinal change in tactics) near the end of the war that provided some promise of actual victory – the airplane and the motorized, armored tank.[119]

The tank is an individual system that combines the three combat arms effectively, thus achieving synergy – a greater effect than is possible by the three separate parts.[120] Historical examples and German and Allied tank designs could be evaluated on the three primary components that create the synergistic shock effect: mobility, survivability, and lethality. If one component is stressed more than the other, then the system takes on different characteristics; this individual design will lead to intended uses that vary from the assault system that is the tank. For instance, if a design affords less protection and fire power but more speed and obstacle clearance capabilities, then the system takes on more of a cavalry role of encirclement, pursuit, and exploitation – it is not meant to crash through enemy lines and take on heavier systems head to head.[121] If the tank is designed with extra protection and lots of guns, specifically large caliber main guns, then the system is being built to assault and survive contact in the close battle. Shock effect can be achieved in both of these systems; one is based on a perceived threat to general organizations and populations, one on physical and moral destruction of combatants in close quarters (that can then lead to a threat to the general population).[122]

Contemporary Experiences of World War I

The tanks of World War I, designed and produced initially by the British, with some crafty borrowing of designs and fighting machines from their foes by the Germans, were by no means the perfect system that had "victory" stamped into their thin metal boxes, but they did combine the capabilities of mobility, lethality, survivability, and add the quality of shock effect to

[119] Richard M. Ogorkiewicz, *Technology of Tanks I* (Surrey, United Kingdom: Jane's Information Group, LTD., 1991), 3.
[120] John Ellis, *Brute Force* (New York, New York: Viking Penguin, 1990), 37-39.
[121] Richard M. Ogorkiewicz, 10.
[122] H.C.B. Rogers, 20.

the Western European battlefield where it had been non-existent.[123] It was not a given that this new system would break the enemy and end the war, but with careful observation and insight from the battles of Cambrai and Hammel, it should have been apparent that the potential was there.[124]

In these early battles the Allies did not use the elements of surprise, concentration, mass, mobile reserves, objective, and complementary arms (e.g. infantry and artillery) to the best of their abilities, and yet the tanks still broke through the German lines. The lines were not only broken – they were smashed. When the Germans, with their own A7V tanks and some British Mark IVs taken during previous engagement employed armor in the attack, the British lines also disintegrated; [125] the Allied front was reformed only when the 2nd British Armored Brigade was quickly organized and brought into the fight to stop the German tanks.[126] This was successful and demonstrated a lesson that the best anti-tank weapon is another tank (on both sides tanks would bypass heavy guns of the opponent due to their lack of mobility and inability to reposition) and that in tank warfare a tank reserve should be held, and that these tanks should be able to kill the enemy's tanks.

The British also displayed some adaptive capabilities by identifying the need for additional armor protection on their Mark I tanks; the Germans had developed armor piercing "K" ammunition that allowed machine guns to take out British tanks.[127] During the Battle of Cambrai the British employed Mark IV tanks which were supported with adapted Mark IVs used for mobility and command and control enhancement.[128] The former employed grappling hooks and chains to pull wire obstacles out of the way of the advance, and the latter had wireless and

[123] C.R. Klutz, *War on Wheels: The Evolution of an Idea* (Harrisburg, Pennsylvania: The Military Service Publishing Company, 1940), 201.
[124] Richard M. Ogorkiewicz, 8.
[125] H.C.B. Rogers, 64.
[126] Ibid., 60.
[127] Ibid., 49.
[128] Ibid., 56.

cable distribution capabilities. All of the Mark IVs were fitted with "fascines" of wood and chain that were mounted on the nose of the tank and allowed for greater ditch clearing capability. Finally, supply tanks with sledges were used to sustain the fight.

Though primarily reinforced only through the battles of Cambrai, Hammel, and then Amiens, there were also multiple failures on both sides to learn what not to do in the employment of tanks and development of tank tactics. [129] These few examples provided for ample insight and lessons learned for future events.

Creating an Armor Force and Doctrine

Immediately following World War I the German army initiated a series of after action reports that covered both the Allied and Central Power perspectives and defeats as well as victories.[130] The goal was to really learn what went wrong and right and fix the military for the future conflicts that were guaranteed to be on the horizon due to the humiliating Versailles Treaty. The Germans read J.F.C. Fuller's insights and lessons on armored warfare, and later also read Charles deGaulle's ideas on a professional independent armor force (they may have also received planning guidance from his prediction of an attack through the Ardennes forest and around the Maginot Line to initiate World War II in France). [131] The Germans studied the existing tank designs and equipment, and paid particular attention to the size of the guns in their armament. All of this was completed to support a program that was restricted by the Treaty, and implementation began in secret with Soviet help at the Kazan armored base in 1922.[132] This experimentation was out in the open in 1926 and two years later the German army had ten tanks of 2 types – a light and a medium.

The German government and military knew that if they were going to wage a war in continental Europe and possibly into Africa and Asia, it would have to quickly be decisive so that

[129] C.R. Klutz, 217.
[130] James Cary, 89.
[131] Ibid., 84.
[132] H.C.B. Rogers, 84.

victory may be achieved before America and her vast resources were brought to bear. Seizing upon Heinz Guderian's ideas of combined arms units organized at the lowest levels and applied with very quick tempo, the German army formed panzer units that would exist to disintegrate the enemy through the application of brute force to create shock effect.[133] This shock effect would compound throughout the enemy military and nation and lead to rapid victory. The environment in which the German military found itself operating demanded a synergistic approach – her resources and geographic situation were limiting factors. Shock effect through a concentrated mass of tank systems on a fairly narrow operational front, supported by the other arms and services, provided to Germany the opportunity to defeat more with less.[134]

The German leadership early on decided to focus on a few models of light, medium, and heavy tanks and to produce large quantities of each of them.[135] The key in their opinion was proper application, not the characteristics of the tanks themselves, though the German organization still focused on the effect of each class of tank and fielded them accordingly. Thus the fewer medium and heavy tanks were placed into selected shock units that would be in the assault, and the more numerous light tanks were mainly used to conduct rapid movement to gain contact, encircle the enemy, and exploit close battle success, especially as illustrated later in Poland.[136]

The Allies initially had the lead in tank system design, as well as organizational experimentation. The British Mark VIIIs and French R-35s were superior overall in the comparison of mobility (suspension, engine, speed, vertical clearance), survivability (armor protection and maintenance), and lethality (main gun and complementary machine guns).[137] The French were still out-producing the Germans in tank systems up to 1939, and these tanks were

[133] James Cary, 91.
[134] Ibid., 81-83.
[135] H.C.B. Rogers, 88.
[136] C.R. Klutz, 231.
[137] H.C.B. Rogers, 68.

qualitatively superior. But, the French politico-military environment did not allow for development of supporting doctrine that would capture the essence of shock effect. To the French military, the tank system was really just a mobile artillery system; the artillery was the key to French military doctrine, thus the tank was really just another system within that combat arm.[138] Also, the French political desire to steer away from any form of aggressive, offensive maneuver warfare minimized the role of tank systems in the deep and close fight. Needless to say, shock effect was not achieved through the combination of French doctrine and tank systems design. The British had similar problems and under-resourced their tank programs. The 1926 Experimental Mechanized Unit demonstrated the ability to organize completely armored units that were self-sustaining, but again there was no real official motivation to train and field this unit, thus it went away. [139] However, the Germans took note of the organization specifics.

In the United States, the World War I experience was a plan to utilize the British Mark IV then VIII following the war years. In 1926 the Army first specified a need to the Ordnance Department a need to develop its own tank. All designs were light in nature due to the conflicting roles and lack of independent development; the infantry saw the tank system as a direct fire support platform with mobility for the close battle, and the cavalry envisioned a motorized horse to conduct traditional security and reconnaissance missions.[140] Neither of these arms owned development, and neither could see the utility of shock effect that could be gained through bigger tank systems and more appropriate supporting doctrine. Also, the US Army allowed other supporting functions, such as transportation and engineers, to specify tank system capabilities based upon their operational and tactical limitations.[141] Finally, the decision by MG Lesley

[138] Ibid., 93.
[139] C.R. Klutz, 226-228.
[140] Charles M. Bailey, Faint Praise, American Tanks and Tank Destroyers During World War II (Hamden, Connecticut: Archon Book, 1983), 2.
[141] H.C.B. Rogers, 89.

McNair and GEN George Marshall[142] to develop and field the tank destroyer as the primary counter to German tank systems diverted critical resources away from the struggling armor force[143].

Britain and France had the lead in tank system and organization design following World War I. [144] America and Germany were basically at the same starting point – neither had invested too much in their own original concepts. The Versailles Treaty also restricted Germany from developing and fielding tank systems and armor units, so they were at even greater disadvantage. But, Germany did have a vision of how they were going to fight the next war and through analysis of history and experience, plus application of critical resources, the German military developed a doctrine that emphasized shock effect in concentrated armor units featuring tank systems in the assault role. The Allies were determined that there was not going to be another war, fought themselves internally over many things (service, branch, political, academic), then decided upon a defensive or reactive posture when it was realized that German aggression would lead to another world war. Because of this last condition, shock effect was not placed at a premium, though even in the defense the brutal concentration of tank systems could create shock action.

Conclusion

The German and Allied armies shared a common library of historical and contemporary experiences in tank warfare lessons learned.[145] The Germans understood what could be achieved by applying system design to aggressive doctrine to create shock effect, and they determined that shock effect would be the key to decisive victory.[146] The Allies did not appreciate the value of shock effect gained from tank systems and created a doctrine that dispersed those systems

[142] Charles M. Bailey, 3-6.
[143] George MacLeod Ross, *The Business of Tanks 1933 to 1945* (Elms Court, United Kingdom: Arthur K. Stockwell, LTD., 1976), 292-293.
[144] H.C.B. Rogers, *Tanks*, 75-79.
[145] Ibid., 15.
[146] C.R. Klutz, 220.

throughout the battlefield in direct support of the primary arms of infantry and cavalry[147]. In the summer of 1940 this lack of appreciation for shock effect almost cost the Allies their future.

Currently the US Army is struggling with designing new combat systems to support the infantry while trying to break from its reliance on heavy tracked M1 main battle tanks. We are developing direct fire support systems that have no synergistic quality of combining the qualities of the three arms to create shock effect. Though the value of tank warfare was seen during the ground combat phase of 'Operation Iraqi Freedom', where once again an armored force utilizing shock effect destroyed more with less, the Army still seeks to replace these systems with Stryker or Future Combat Systems (FCS) vehicles that may only be able to provide direct fire support to the infantry. The emphasis on both Stryker and FCS is in strategic mobility to deliver the systems and units to the theater, and in tactical mobility to deliver infantryman to the close battle, like mounted dragoons of years past. Unfortunately, this does not add to the desired combination of psychological, temporal and physical destruction effects upon the enemy which is ultimately required to achieve victory. Though resource heavy, the shock effect value of the M1 main battle tank is proven.

[147] Ibid., 229-230.

APPENDIX 2 – THE INTEGRATED CONCEPT TEAM

In the current BCT-centric Army, multi-functional Units of Action (UAs), built along three types of systems (light infantry, wheeled, armored) conduct multi-purpose Full Spectrum Operations (FSO), usually focusing on one of four types of operations (offense, defense, stability, support). There will be a migration of this force; while maintaining its multi-functional structure, the UA will become mission-oriented, and then become the nucleus of the joint function of force application (FA) within greater force structures that themselves are mission-oriented. This will continue the purpose-driven force development of the Army Maneuver Branch.

The United States Army 2004 Posture Statement includes the concept of simultaneous development of the Future Force while adapting the Current Force. This requires a fine balance between "doing" and "thinking about doing" – the challenge of changing our Army while it is in the middle of a fight. It should be obvious that we do not have the luxury of creating great experimental labs or units with unlimited resources to develop the solution to our challenge. A system must be in place that integrates both current operators with institutional and resource managers and professional force managers.

The nucleus of this system already exists in the Integrated Concept Team (ICT), which is found within the current Army Force Management and Force Development Models. But, the current structure of the ICT does not satisfy the intent of relevant and simultaneous adaptation of the Force. A Brigade Combat Team-centric ICT would allow us to achieve the Chief of Staff's vision of leveraging the operational experience of the Current Force to directly influence the pursuit of Future Force capabilities. This unit of action ICT, or UAICT, will provide the immediate feedback and relevant input that is absolutely critical and currently missing in our Force Development system. In essence, the UAICT would encompass the entire Force

Development Process, at the BCT level, and be capable of influencing the entire Army Force Management system.

Currently the ICT is used primarily in Phase 1 – Generate Requirements for DOTMLPF of the Force Development Process. The ICT is formed out of various Training and Doctrine Command (TRADOC) and combat development teams to "aggressively identify and work issues" within a concept. Considering current Army warfighting functions, plus historical proponent input, integrating concepts are developed. These developed concepts express required or described functional capabilities embedded in the Future Force and linked to the Army Capstone Concept. The Capstone Concept is the collective vision of the current and future Army and is directly linked to the National Security Strategy, National Military Strategies, Joint and Army Visions, The Army Plan, the Army Campaign Plan, and other key conceptual documents. The current ICT is a critical component of this nested process, but it involves the wrong people who are too restricted in scope and application.

As stated above, the Unit of Action Integrated Concept Team would be tasked with accelerating DOTMLPF adjustments in response to warfighting functional developments and operating force requirements, as well as transformation goals in the pursuit of Future Force capabilities. This UAICT would work within the framework of the Army's new Unit Life Cycle (ULC) management system, which fences a BCT and all of its assigned personnel and units into a 3 year period of three sequential phases: Phase I – Reset/Train, Phase II – Ready, and Phase III – Available. Another way to look at this is refit/recovery and individual training/education, followed by unit training, and finally unit deployment into an operational theater. The latter phase supports the 'simultaneity stack' strategy of deterring forward and possibly fighting concurrent regional conflicts; units in Phase III of their ULC may find themselves in Germany, South Korea, Iraq, or any number of other locations around the globe. So, within this framework, personnel are stabilized and can reasonably expect to know where the Army is planning to send

them on operational deployments during their Phase III year. Personnel are currently assigned to a BCT for 1 or more ULCs.

The key to the UAICT concept is leveraging the experience of the personnel completing their ULC, which includes intensive training and operational deployments, and integrating that into the next ULC. Up to 50% of the just completed ULC personnel will stay with the unit for another 3-year ULC; of these personnel, select representatives from each of the units, warfighting functions and DOTMLPF managers would be assigned to the UAICT. This assignment would not interfere with the intent of the ULC and force stabilization concepts and would be seen by personnel managers as a positive enhancement to each individuals' career development. Thus, quality people should be assigned. Also, these professionals will have to live with the implemented results of the UAICT during their next deployment in Phase III of the upcoming ULC. Joining the team will be DA and DOD level representatives of the DOTMLPF activities within force development and integration processes. The Maneuver Center would be well represented by its combat, concept, and force developers. Professional force managers with the expert knowledge of the various force management systems will be assigned to keep the process disciplined and realistic.

This full integration of operators and resource and system managers will ensure the UAICT is manned properly. The team will be tasked with implementing the full Force Development Process within the midpoint of Phase II of the unit's ULC. The UAICT would be tasked to assess current Mission Essential Tasks in support of the Capstone Concept and determine additional requirements necessary to complete the mission, with an eye on the upcoming ULC Phase III operational deployment. This would be the UAICT's primary task. Second, all DOTLMPF domains, specifically in support of the Capstone Concept and the METL, would be considered. Finally, additional supporting or new concepts could be considered to support overall Army transformation efforts. Senior Army leaders would emphasize the importance of UAICTs and ensure full resources are provided to allow the team to accomplish its

tasks. The goal is to transform the BCT while preparing for the next 3 years of training, deployments, and operations. With this occurring throughout the Army and with one third of all BCTs in Phase I at any given time, a continuous Army-wide transformation is possible.

To achieve this simultaneous transformation (BCT and Army) while adapting the Current Force (the recently finished ULC unit) into the Future Force (the upcoming ULC unit), a few shaping efforts must be considered. Throughout the previous ULC, continuous After Action Reports would have been conducted. Data, observations, lessons learned, and information must be collected, analyzed, stored, and disseminated. There must be information repositories within the specific BCT and with each of the outside members' organizations (the resource and systems managers) that will be participating in the upcoming UAICT. To illustrate, individuals must be aware of the overall effort and intent of the UAICT prior to them actually forming the team. This will take some prior selection, notification, and coordinating to keep everyone aware of the status of the BCT and the upcoming UAICT. Perhaps a staff position within the units should be created for UAICT. Only with efficient and effective proactive information management can such potentially big changes to the DOTMLPF domains be implemented in such a short time (Phase I, and half of Phase II – ideally no more than 16 months).

The UAICT will enable the BCT to shift its operational focus from the previous theater in which it was deployed during Phase III of the ULC to its next deployment in its new ULC mission area (e.g. just redeployed from Azerbaijan with the next deployment to South Korea). This would ensure that the entire organization's change in direction, across all aspects of the warfighting functions and DOTMLPF is integrated, relevant, and resourced properly. A transformation would occur within a unit, and within the Army. This process would repeat continuously within the framework of the ULC model for each unit.

Conclusion

Currently, the Integrated Concept Team is a key player in determining requirements in support of the Army Capstone Concept. The TRADOC-derived ICT should continue to play this

part in Army-wide force management (development and integration). But more importantly, a BCT-level ICT should be created and resourced to allow concurrent transformation and future operations preparations to occur within Army war fighting units. These UAICTs should be manned by BCT personnel and Army and joint force management personnel and be backed by the DOD processes and senior leadership. The UAICT would operate within the framework of the BCT's Unit Life Cycle and address adaptation of Army DOTMLPF and warfighting functions to ensure Future Force capabilities are integrated into the Current Force. This would be a systemic continuous improvement process led by the Army Maneuver Center within the ARFORGEN model.

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